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Technology in the Massachusetts Classroom

A Summary of Chapter 188 Educational Technology Grants 1988-1989

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Technology in the Massachusetts Classroom

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The Commonwealth of Massachusetts
Department of Education

1385 Hancock Street, Quincy, Massachusetts 02169-5183

Dear friends,

We are pleased to provide the most recent edition of "Technology in the Massachusetts Classroom: A Summary of Chapter 188 Educational Technology Grants 1988-1989." Educational technology grants are awarded by the Board of Education for planning and implementing projects that use technology as a tool for learning and to encourage model projects that may be replicated or disseminated to other school districts. We wish to acknowledge the Department's Technology in Instruction (TII) Committee for assisting schools in these significant projects. Also, special thanks are due to members of the Educational Technology Advisory Council (ETAC) for their generous contributios of expertise, time, and energy.

We take pride in the wealth of activity and talent described here. We wish to express appreciation to many teachers, administrators, and parents, whose efforts enrich the educational experience for students across the commonwealth.

Harold Raynolds, Jr.

Harold Raynolds, Jr.
Commissioner of Education

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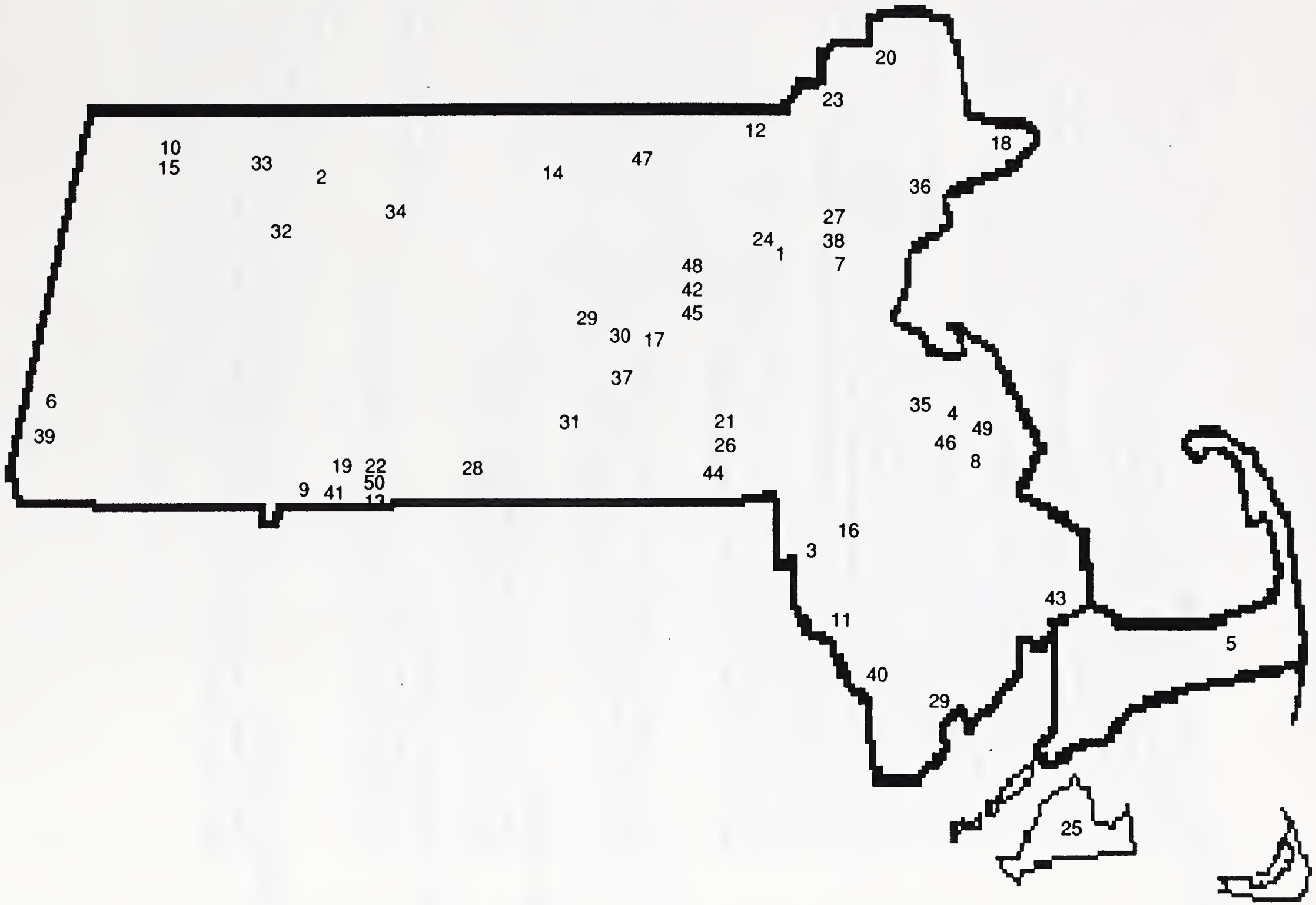
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Technology in the Math Classroom
Arlington

Curriculum areas:
Secondary mathematics

Grade levels:
7 through 12

Equipment:
Apple IIe with Apollo 9000 computer display panel, IBM 30-286 with Sharp QA-50 computer display panel

Materials:
Software: Math Exploration Tool Kit, True BASIC series, How the West was Won, Right Turn.
Other: TI Math Explorer and TI-30 calculators

Personnel:
Consultants from Lesley College, Math Department Chair and teachers (6 member planning group).

Description:
This project provided workshops in the use of computer software and calculators for secondary mathematics instruction. It encourages alternate teaching strategies and serves as a catalyst for math department efforts to adapt National Council of Teachers of Mathematics (NCTM) recommendations.

Objectives:
1. To increase department use of computers and calculators in the classroom or computer labs.
2. To encourage teaching strategies that involve more analytic thinking and self-learning.
3. To improve the training of basic skills in algebra and pre-algebra.

Procedures:
1.Members of the planning group attended a math/ computer conference and drew up a list of recommended software for purchase.
2.The group planned training workshops and departmental meetings in curriculum development.
3. Training workshops and curriculum meetings took place. Computers were purchased for each junior high and access was improved at the high school by opening an "electronic classroom" equipped with 5 IBM computers. One computer was equipped with a computer display panel to be used for full class presentations, and the remainder were placed on moveable carts for easy access to six adjoining classrooms.
4. Participants attended twelve training and implementation workshops focusing on computer software and calculator use. During the year, all teachers used at least one piece of software with their classes and increased their use of calculators for concept development. Teachers began piloting a cooperative learning approach and created lab sheets to facilitate student use of software.
5. The final step involved evaluation of the project and planning for the following year.

Recommendations:
It is important that leadership roles be sorted out before the in-service begins. In this project, the university staff and the department chair worked well together, each taking responsibility for a specific project component, while sharing in decision making. It is essential that participants be involved in planning the workshops and curriculum meetings.

Paying participants an hourly rate for in-service time was important. It made participants feel that their efforts were valued.

Grant type:
Implementation

Contact:
Frank Propp
Arlington High School
869 Massachusetts Avenue
Arlington MA 02174
(617) 646-1000

Higher Order Thinking Skills (HOTS)
Athol

Curriculum areas:
Remedial reading and math, grades 4 through 8; gifted and talented, grades 1-3; at-risk and eligible Chapter 1 students, and special needs students .

Grade levels:
1 through 8, concentrating on grade 5.

Equipment:
6 Apple IIe or IIGS computers w/128K, color monitors, mouse, ImageWriter printers.

Materials:
A wide variety of software programs, teacher guides and student materials.

Personnel:
One teacher per each 6 students.

Description:
This project provides a "Thinking Lab" equipped with 6 microcomputers. Students come to the lab in groups of 4 to 6 for a daily, 35-minute lesson. During a typical class, students meet with the teacher at the "thinking table" for a 10 to 15- minute discussion of previous lessons or an introduction to a new concept. Care has been taken to assure that students do not leave their classrooms during reading or math instruction.

Objectives:
1. To develop students' general information processing skills that include a) strategy development, b) strategy testing, c) comprehension and decision making, d) articulations of concepts, and e) connecting ideas.
2. To increase students' self-confidence so that they will engage in problem-solving activities wherever they occur.

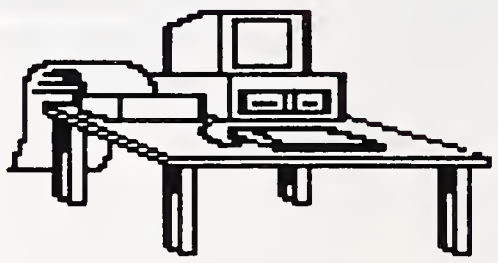
Procedures:
1. A typical unit is 5 or 6 lessons long, and centers on one or two pieces of software.
2. Each lesson begins with a pre-teaching activity of 10-15 minutes where the teacher establishes linkages to other lessons. The students then respond to thinking questions and articulate their findings from the previous day.
3. At the end of the pre-teaching, students are given a challenge and sent to the computers alone or in pairs to solve the problem.
4. Some lessons contain post-teaching where the students leave the computers and meet to articulate their findings.

Recommendations:
This is an excellent project for Chapter I and at-risk students. It requires only a single pull-out from any given classroom. It is a much greater motivator than drill-and-practice exercises. It involves not only the students, but classroom teachers, administrators, and parents.

For this project to work best, administrators and classroom teachers need to support and cooperate fully with the program. Teachers and administrators must be involved with the program and instructed on the program prior to its implementation.

Grant type:
Implementation

Contact:
Susan C. Donham
Riverbend School
174 Riverbend Street
Athol, MA 01331
(508) 294-4851



Project Write
Attleboro

Curriculum areas:
Writing and writing across the curriculum

Grade levels:
6 through 8

Equipment:
IBM PS/2, model 25 (15 monochrome, 1 color),
6 IBM printers, 5 data switch boxes and cables

Materials:
Software: Microsoft Works word processing and TYPE!
(IBM keyboard tutorial)

Personnel:
Language arts teachers

Description:
In this project, students were assigned to the writing lab for their regular language arts program. Students were first given an introduction to the word processing software. Once comfortable with this, they began writing assignments on the computer. We hope that with a computer-student ratio of 1:2, students will improve their writing skills with the help of word processing programs.

Objectives:
1. To teach students to use the word processing software effectively.
2. To improve students' writing so that they are able to meet or surpass a minimum writing sample standard.
3. To train staff in the use of hardware, software and the writing program.
4. To produce a handbook describing the project.

Procedures:
Students and teachers received an introduction to the IBM PS/2 computers and instruction in Microsoft Works word processing. After the training, students were scheduled into the writing lab for language arts. Some students served as peer tutors, helping others who were experiencing problems with either hardware or software. A faculty committee is completing the handbook of ideas and suggestions for integrating technology into the writing curriculum.

Recommendations:
If a school has the appropriate number of computers, this project can be successfully introduced into the writing curriculum. This program has proven successful with all students, and especially those of limited ability. All students are sharing completed samples willingly with teachers and classmates. Through the use of a spell-checker, students have become aware of the importance of correct spelling in a writing sample. The greatest weakness is the computer/student ratio of 1:2. Students have access to the computers only half of their lab time. A 1:1 ratio (or smaller class size) would be ideal for this activity.

Materials available:
Booklet: Integrating Word Processing into the Writing Curriculum. Available for a nominal fee.

Grant type:
Implementation

Contact:
Mary Cinelli
Peter Thacher Middle School
James Street
Attleboro, MA 02703
(508) 222-1922

Distance Learning
Avon

Curriculum areas:
All

Grade levels:
9 through 12

Equipment:
Satellite dish and related hardware (cable wiring and hookups to classrooms)

Materials:
TI-IN network materials

Personnel:
Site facilitator

Description:
This distance learning satellite classroom provides a range of high school courses and staff development programs through the TI-In network.

Objectives:
To provide advanced and honors courses that would otherwise not be available due to financial constraints or declined enrollment.

Procedures:
Students and staff are informed through the guidance office of the courses and offerings available on the network. Administrators make every effort to schedule students into these courses. The facilitator assists them in the courses.

Recommendations:
The biggest problem is that the schedules of the school and the network do not match. Also, in order to use the network, each room needs to be wired. However, the opportunity to offer live and interactive courses to students and teachers is worth every effort.

Materials available:
Revised TI-IN materials.

Grant type:
Implementation

Contact:
Michael Lane
Avon High School
W. Main Street
Avon, MA 02322
(508) 583-4822

Project CAPE (Computer-assisted Peer Editing) Barnstable

Curriculum areas:
English

Grade levels:
7 and 8

Equipment:
Apple IIGS, Apollo overhead display units

Materials:
Software: PFS Write, Writers Helper Stage II
Other: related computer supplies

Personnel:
Classroom teachers

Description:
This project helped to equip all the English classrooms in the school with computers and LCD projection systems. English teachers demonstrated revision techniques and students gained insight into structural organization, fluency, and grammatical construction in regular assigned writing.

Objectives:
1. To improve writing instruction.
2. To assist students' editing skills through the use of group editing process.

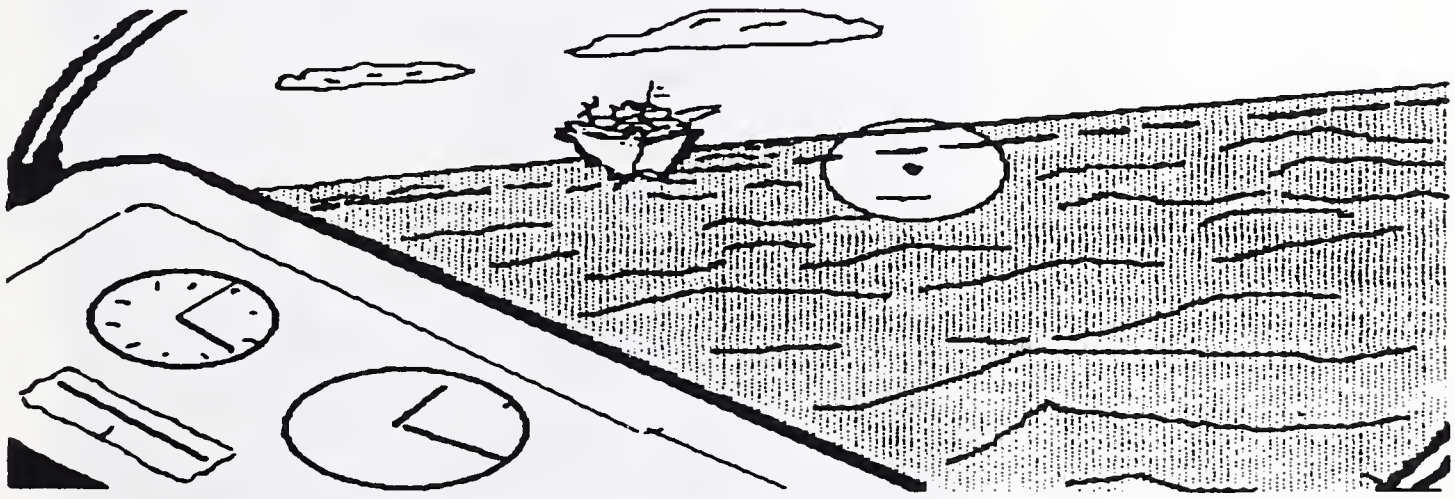
Procedures:
1. Acquire the necessary hardware.
2. Instruct teachers on the use of the hardware.
3. Provide teacher in-service training on group editing skills and the writing process.
4. Develop a packet of instructional activities which maximize teacher use of hardware to reach the objectives.
5. Implement the project with students.

Recommendations:
This project allows students to receive immediate peer feedback on their writing. The computer makes students more willing to allow their writng to be criticized, and promotes more constructive criticism on the part of peers. The initial hurdles generally encountered in producing writing for publication are overcome by this method.

Materials available:
A booklet of instructional activities for classroom teachers is available at cost.

Grant type:
Implementation

Contact:
Rick Bidgood
Barnstable Middle School
895 Falmouth Road
Hyannis, MA 02601
(508) 771-4600



Writing to Read
Berkshire Hills Regional

Curriculum areas:
Reading, language arts, writing, computer literacy

Grade levels:
Kindergarten through 2

Equipment:
IBM PC2, IBM 4201 Proprinter model 2

Materials:
Software: IBM Writing To Read -Primary Editor Plus
Other: Cassette tapes, players, Writing to Read Cycle Journals

Personnel:
Classroom teacher, project aide

Description:
A pilot "Writing to Read" program for grades kindergarten through 2 was established in one elementary school. All teachers from kindergarten through grade 2 in the four district elementary schools received in-service training so that they could conduct the program in their own schools.

Objectives:
1. To improve reading and writing skills through the use of technology by implementing a Writing to Read pilot program from kindergarten through grade two.
2. To establish a Writing to Read Lab staffed by a trained aide.
3. To implement an in-service training program for teachers to increase their techniques to teach writing and reading skills through technology.
4. To disseminate the results of the Writing to Read program to parents and teachers in the target school and the other elementary schools to demonstrate the program's progress.

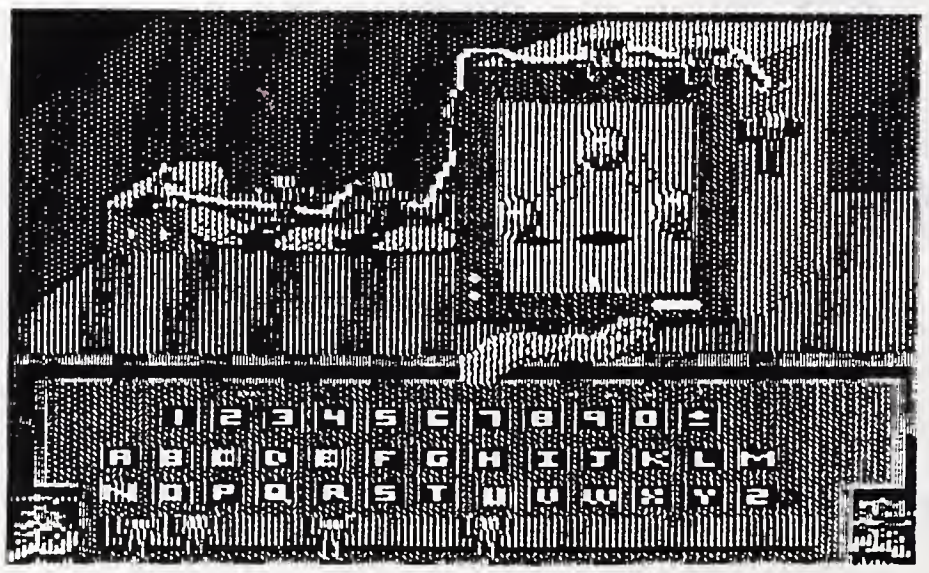
Procedures:
Materials were ordered and a project aide was hired. The aide and the teachers received a two- day in-service training. The principal attended a three-day Writing to Read training. A "Parent's Night" forum informed parents about the program. Classes were then oriented to the program before starting. Students spend one hour per day participating in the program.

Recommendations:
This program can be used as a beginning reading and writing program. It can be used as an independent system or in conjunction with any other program. The strengths of the program are the motivation and success the children experience in learning to read and write, as well as their mastery of computer skills.

Grant type:
Implementation

Contact:
Thomas B. Meade
Plain School
Main Street
Stockbridge, MA 01262
(413) 528-4743

John Tedrow



Math and Science Training Connection
Boston

Curriculum areas:
Math, science. (The format could apply to all curriculum areas.)

Grade levels:
Kindergarten through 8

Equipment:
Audio bridge, T.V., speaker phone, T.V. studio, cable-ready schools, pin drop

Materials:
Videotapes, base ten blocks, Cuisinaire rods, science kits

Personnel:
10 contact people, 10 facilitators, 2 instructors, 7 technicians.

Description:
10 Boston elementary schools are linked via a long distance learning project geared toward teachers' professional development. An instructor at the T.V. studio provides eight training sessions (4 math and 4 science) involving hands-on activities and materials for immediate classroom implementation. Each of the 10 schools has a training room equipped with a T.V. and speaker phone. This allows the teachers to receive live video training and to communicate with the instructor by way of the speaker phone.

Objectives:
1. To expand accessibility and to upgrade the quality of professional development in math and science .
2. To design and implement a successful model for the delivery of professional development using distance learning technologies.

Procedures:
1. Establish a working arrangement with:
cable office, mayor's office, curriculum department, school media services.
2. Set up of project:
a.Recruit school sites and determine location of training rooms.
b. Install cable or phone lines.
c. Train facilitators/contact persons.
d. Recruit participants.
e. Identify technicians and install audio bridge; test audio/video signals.
f. Write scripts and rehearse sessions.
3. Cablecast sessions and implement in classrooms.

Recommendations:
Use of cable is cost effective and provides excellent quality; however, the overall design would work well with other delivery models.

The results are overwhelmingly positive. Over 200 teachers and administrators have attended the training: 80% stay at their own schools, while the other 20% travel to a nearby school or to one on their way home. Both courses are taught by experts in their fields. The evaluations are overwhelmingly positive and teachers are using the materials in their classes.

The weakness we note is the need for a site facilitator. We are exploring other models that will be as effective, but less costly.

Materials available:
Eight videotapes, one from each session.

Grant type:
Implementation

Contact:
Marilyn Gardner
The Humphrey Center
75 New Dudley Street
Boston, MA 02119
(617) 442-5200

Strengthening Teacher Confidence with Computer Bridgewater

Curriculum areas:
All

Grade levels:
Kindergarten through 6

Equipment:
Computer, disk drive, printer

Materials:
Software: multiple copies of math and social studies programs.

Personnel:
Computer resource consultant

Description:
This project provided a computer resource consultant to support Bridgewater K-6 teachers in using educational technology effectively in achieving curriculum goals in their classrooms.
This support was provided to teachers "on the job" so they could evaluate software as well as develop an appropriate role for the classroom computer. Major curriculum areas enhanced with this project were challenging thinking potential and mathematics.

Objectives:
1. To strengthen classroom teachers' confidence in using educational technology in their classrooms.
2. To assist teachers in determining the appropriate role for the classroom computer at each grade level.
3. To support teachers with computer use for introducing new concepts and reinforcing concepts previously taught.
4. To assist teachers in developing innovative teaching methods involving the computer.

Procedures:
A Chapter Two grant provided new Apple computers for teachers. Existing classroom computers were evaluated for function and memory upgrades. Software was researched, evaluated and purchased. Additional manuals and teacher materials were provided. Individual consultations with classrooms teachers were initiated.
A series of interactive classroom lessons began with the teacher and students participating as the consultant demonstrated software. An effective teaching management system for a one computer classroom was often needed to provide confidence for the teacher. Student and teacher "help cards" were developed to assist with daily activities and follow-up lessons were provided for teachers desiring advanced skills.

Recommendations:
A useful culminating activity would be a half-day workshop led by the computer consultant. The computer consultant could provide an overview of the research done, the resource materials developed and the classroom lessons designed and taught successfully during the project year. At this workshop the consultant could determine the needs of the educators and make suggestions regarding hardware, software and in-service training.

This type of project can provide adequate teacher training and support to implement the school-wide use of computers in the classroom. It can facilitate the purchase or repair of necessary hardware, provide assistance in the selection of high quality educational software and help develop ancillary materials to support the use of computers in the school.

Lack of time for in-service training and inadequate funds for the purchase of high quality software can be limiting factors.

Grant type:
Implementation

Contact:
Brenda Kugan
Williams School
200 South Street
Bridgewater, MA 02324
(508) 697-6150

Computer-assisted Instruction In-service
Chicopee

Curriculum areas:
All

Grade levels:
1 through 8

Equipment:
Computers, printers

Materials:
Software: Bank Street Writer III - reading and math software
Other: hand-outs

Personnel:
Consultants

Description:
The project provided in-service training to more than 50 teachers in the use of current software and the integration of software to curriculum areas. Teachers also learned word processing skills and the use of a CAI lab software program. There was no direct student involvement in this project, although indirectly 425 students will benefit from teacher training in the CAI lab.

Objectives:
1. To allow teachers to obtain current information on the trends in educational software.
2. To inform teachers on methods of integrating software into their curricula and ways to implement computer use in the classroom.
3. To provide teachers with skills in word processing and the use of the CAI lab software program (reading/ math) with their students.

Procedures:
1. Eighteen elementary classroom teachers attended a one-day intensive workshop given by an expert consultant.
2. Forty-one seventh and eighth grade teachers (at-risk, resource room, reading, and math) received 4 hours of in-service training on the use of CAI lab program and software by a consultant.

Recommendations:
Under the guidance of a consultant, elementary teachers had their first opportunity to do "hands- on" work on a computer and to consider the ways in which computers could be integrated into their classrooms. This appeared to be a successful way to introduce the computer at the elementary level.

Materials available:
Consultant's "Computers in Your Classroom" guide and hand-outs.

Grant type:
Implementation

Contact:
George J. Sakellis
Administration Building
180 Broadway
Chicopee, MA 01020
(413) 592-6111, x457

LEGO TC LOGO
Clarksburg

Curriculum areas:
Math, science

Grade levels:
3 through 8

Equipment:
Apple IIGS, computer taxi-mobile cart

Materials:
LEGO TC Logo Technic Control 0 Set, LEGO Technic II motorized machines set

Personnel:
Math and computer teachers

Description:
The LEGO TC Logo educational program enhances the math and science curricula and contributes to the awareness of computer technology in the classrooms. The project offers a wide range of opportunities for learning basic educational skills as well as initiating creativity in the exploration of unknown areas.

Objectives:
1. To enhance the existing math, science, and computer curricula, as well as allowing gifted and talented, special education, and regular students to work cooperatively as a team.
2. To involve and assist students in basic programming and allow them to test theories, and examine cause/effect relationships, so that they will have real-life, hands-on experience with problem solving.

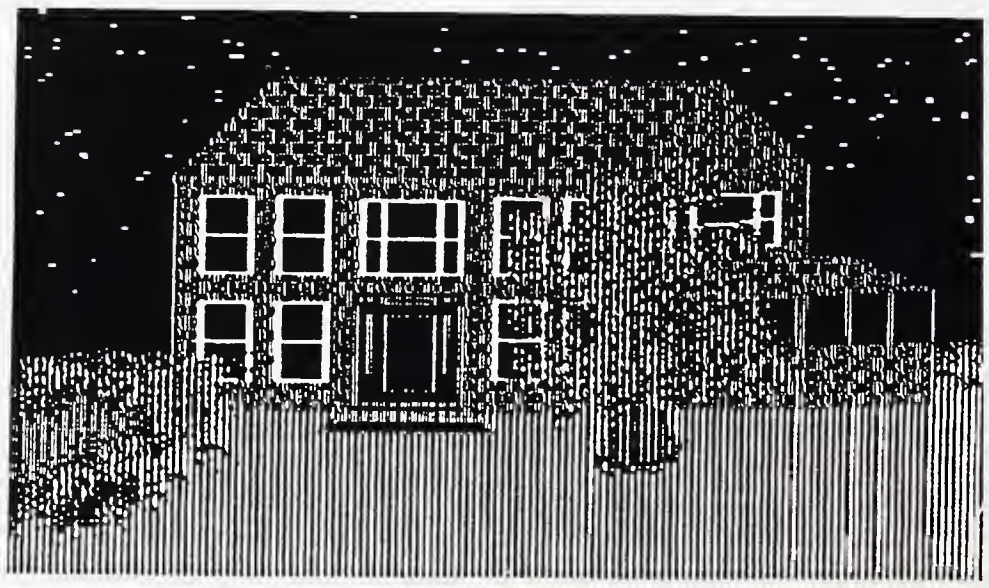
Procedures:
1. After the purchase of the materials, teachers, students, interested parents, and administrators were trained in the use of the system.
2. Students from grades 3 to 8 attended the program once a week as part of their computer instruction time. Advanced level math and science students attended the program for 30 minutes once a week as part of their Advanced Curriculum Enrichment program.
3. Parents and adminstrators were invited to observe the progress throughout the year.

Recommendations:
This program is useful in motivating students to learn math and science concepts, and in making these concepts accessible through hands-on experience. The program also teaches students to cooperate in the planning and execution of complex group projects.

Materials available:
A videotape of the project and computer disks with all evaluation data.

Grant type:
Implementation

Contact:
Mary Ann Maroni
Clarksburg Elementary School
West Crossroads
Clarksburg, MA 02147
(413) 663-8735



Libby Stebbin

Computer Learning Activities Site
Brighton-Rehoboth

Curriculum areas:
All

Grade levels:
6 through 8

Equipment:
Computer Lab: 24 Apple IIGS computers on AppleShare Network

Materials:
Software: AppleWorks, MECC series, Scholastic materials

Personnel:
All staff cooperated

Description:
The CLAS project is an ongoing program that integrates computers within existing subject and curriculum areas. This year the program has serviced the middle school staff with 4 in-service workshops, planning sessions, and brainstorming sessions. We have evaluated software as it has relevance to our curriculum. Workshops have also been given to demonstrate this project.

Objectives:
1. To integrate the use of computers in existing subject/ curriculum areas.
2. To continue planning and evaluating the 5-year computer program in the school system.

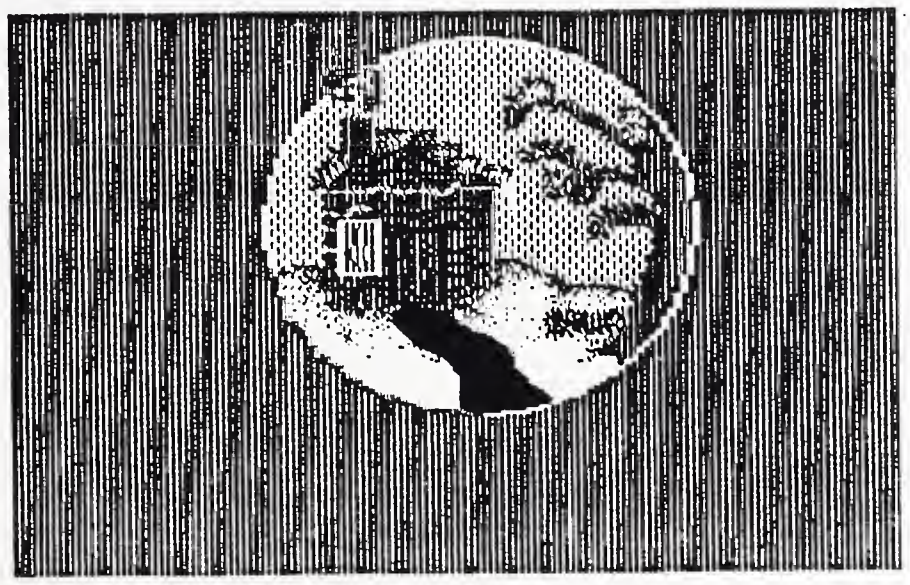
Procedures:
1. Teachers met during the summer to plan and work out a schedule for the project.
2. During the first half of the school year, the staff held monthly meetings to discuss their progress and plan workshops.
3. During the second half of the school year, the staff developed curriculum guides based on students' input. They also met with administrators to discuss future plans on the project.

Recommendations:
This is a successful planning project, and educators are welcome to visit and discuss how computers can be integrated into the different curricula.

Materials available:
We have created 8 projects using computers in the curriculum. These are available via telecommunications. Contact Ray Medeiros on Physics Forum (bulletin board) or write to the school with questions regarding specific subject areas.

Grant type:
Planning

Contact:
Raymond J. Medeiros
Dighton Middle School
Somerset Avenue
N. Dighton, MA 02764
(508) 669-5432



Amanda Gentry

Curriculum Data Network
Dracut

Curriculum areas:
Science and social studies, reading

Grade levels:
4 through 6

Equipment:
Apple computers, cable TV system, RF modems, Digital minicomputer

Materials:
Modified telecommunications software (Point-to-Point), all major science and social studies texts

Personnel:
Science and social studies teachers, educational consultants

Description:
This year-long project served nine classes of fourth through sixth grade students. It resulted in the formulation of a curriculum component emphasizing the development of critical and creative thinking skills in science and social studies.

Objectives:
1. To modify and improve accessibility to the database developed in the previous year's project.
2. To identify and train curriculum team developers who indicated a high interest in integrating critical and creative thinking skills in the elementary science and social studies curriculum.
3. To enable the team developers to create a curriculum component to be infused in the science and social studies curriculum.
4. To pilot test and evaluate newly developed curriculum components during regularly scheduled classes.

Procedures:
Curriculum team developers were trained by an educational consultant in methods for developing higher level thinking skills. Nine teachers on the team developed questions in science and social studies, which became the database collection. The database was uploaded onto a Digital minicomputer. A technical consultant modified the software to make it easily accessible by teachers. Access is now a simple procedure with the step-by-step guide. Students are being exposed to these questions on a daily basis.

Recommendations:
Any school system with a cable TV system, Apple computers, a Digital minicomputer, and RF modems can use this model to incorporate curriculum-based information through a network which links all schools.

Materials available:
Teacher's handbook and user's guide and a database of test items available for purchase.

Grant type:
Implementation

Contact:
Michael F. McNamara
Collinsville Administration Building
2063 Lakeview Avenue
Dracut, MA 01826
(508) 957-4743

Student Writing Center
East Longmeadow

Curriculum areas:
Most areas, including English, science, social studies, math, health

Grade levels:
9 through 12

Equipment:
15 Apple IIe computers

Materials:
Software: AppleWorks
Other: Writing resource materials

Personnel:
Full-time writing coach

Description:
The Writing Center is a facility used primarily by students for work on writing in any subject area. Faculty members from a wide range of disciplines were trained both during the school year and in a summer workshop in process writing and the use of Apple IIe computers. These teachers function as "writing coaches" during the school year and train both students and other faculty on the word processors and in process writing. Coaches frequently team-teach with classroom teachers and aid in the implementation of writing across the curriculum.

Objectives:
1. To implement the process writing approach in the curriculum through the use of word processors.
2. To plan, implement, and evaluate interdisciplinary writing projects.
3. To provide a resource for students to pursue independent writing projects such as college/ scholarship essays, term papers, and essay contests.
4. To encourage students to seek aid in writing from Writing Center coaches.

Procedures:
Classroom teachers have priority in the use of the Writing Center. A teacher who wishes to bring a class to the center must sign up a week in advance in the "Classroom Sign-Up" notebook. A master schedule is devised, copied, distributed and posted throughout the school. The schedule indicates which periods are reserved for classes and which are available for individual student use. Students may sign up during either their study or activity periods in the "Student Sign-Up" notebook.

Recommendations:
Writing Centers can be open full-time and staffed by several individuals or open part-time and staffed by a single person. The availability of word processing equipment is important but, in many situations, only a few computers are necessary.

This program will necessitate training in writing instruction and word processing for involved staff. Also necessary is a person to coordinate and encourage the use of the room.

Grant type:
Implementation

Contact:
Ronald Lech
Birchland Park Middle School
50 Hanward Hill
East Longmeadow, MA 01028

Technological Interventions For Multihandicapped
FLLAC Educational Collaborative

Curriculum areas:
Pre-readiness skills, early reading, communication (language)

Grade levels:
Pre-kindergarten and kindergarten

Equipment:
Apple IIGS, adaptive peripherals and switches to enhance the use of computers by multihandicapped students.

Materials:
Various pre-school software recommended by the Communication Enhancement Clinic, Boston Children's Hospital.

Personnel:
Educational technology specialists and special education teachers.

Description:
A model classroom program was developed, which integrates computers, adaptive peripherals, switches and specialized software directly into the daily classroom routine of young students who are non-verbal and/or physically handicapped. Children were given alternative methods of learning and responding through the use of special keyboards and switches, speech output, simulated electronic communication devices and software. Teachers were trained to use adaptive technology to teach these special students. An Augmentative Communication Consultation Program was developed as a resource for teachers and speech pathologists in the participating school districts.

Objectives:
1. To train and assess students' abilities to utilize adaptive technology for basic skills acquisition and language development.
2. To integrate technology into the classroom curriculum for physically handicapped pre-school students.
3. To train teachers, therapists, and parents of participating school districts in the use of technology to help these students to learn.
4. To develop a resource guide/instructional manual for use of adaptive technology.

Procedures:
1. Non-verbal and/or handicapped students were evaluated to determine: a) their level of cognitive and motor skills, b) their functional skill levels in communication and academics.
2. Goals were developed for each student. Goals involved skill training needed to use specific equipment (for educational and communication purposes.)
3. Ongoing staff training helped teachers to integrate the hardware and software into the classroom curriculum.
4. Documentation of project progress and the review and evaluation of equipment and materials are continuously in process.

Recommendations:
This project serves as a training model for teachers and therapists who provide services to similar populations. Students have increased their communication skills and have made academic progress. However, there is always the need for additional equipment to accommodate the demands of the improved skills of the students.

Materials available:
1. Hardware reviews
2. Software reviews
3. "Introduction to Educational Technology" - a hardware manual
4. Videotapes demonstrating use of equipment and documenting student progress
5. Evaluation protocol

Grant type:
Implementation

Contact:
Christine J. Scarpino
FLLAC Educational Collaborative
44 Wanoosnoc Road
Fitchburg, MA 01420
(508) 345-5250

LEGO TC LOGO
Florida

Curriculum areas:
Math, science, physics, computers, and engineering serving at-risk, special needs, and gifted students

Grade levels:
4 through 8

Equipment:
Apple IIGS and Apple IIe computers, LEGO TC Logo Technic Sets

Materials:
LEGO Logo software
LEGO TC Logo Guide Packs (texts)

Personnel:
Computer education specialist

Description:
This program provides students in grades 4-8 with "real-life" experiences using technological materials (Legos, sensors, gears, computers, diagrams, charts, etc...) that require students to work cooperatively. The program helps students develop a practical understanding of principles in math, science, physics, computers and engineering.

Objectives:
1. To teach students how to work together to plan and execute a complex project.
2. To teach students specific principles in mathematics, science, engineering, design and computers.

Procedures:
The program progresses through the following stages:
1. Building machines
2. Using the computer to control machines
3. Writing procedures and computer programs
4. Using sensors
5. Using robotics
6. Conducting advanced independent projects.

Recommendations:
This program is best used by teachers who have some working knowledge of computers and programming. This program is expensive and requires at least one computer. It is useful in motivating students to study physics, math and engineering concepts, and in making these concepts accessible through "hands on" experience. The program also teaches students to cooperate in the planning and execution of complex group projects.

Materials available:
LEGO Logo Materials are available commercially.

Grant type:
Implementation

Contact:
Susan M. Harper
Gabriel Abbott Memorial School
R.F.D. #2
North Adams, MA 02147
(413) 664-6023

Music Lab
Foxborough

Curriculum areas:
Music

Grade levels:
8

Equipment:
Ensonique synth-sequencer, Roland S10 synth-samplers, Yamaha drum machines, guitars, drum sets, cassette deck, stereo mixing board, Apple IIGS

Materials:
Hanlon and Schriner books, music tapes, theory workbooks

Personnel:
Music department head, music staff

Description:
This project provides all eighth grade students with a facility to study the multiple aspects of music using electronic technology. Ear training, appreciation, composition, performance, and theory are simultaneously introduced and reinforced.

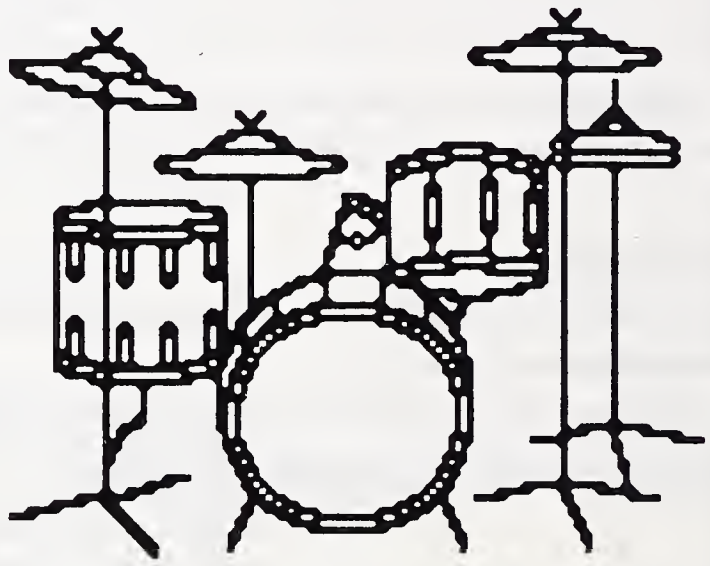
Objectives:
1. To involve the entire eighth grade population in the subject of music and allow individuals to progress at their own pace.
2. To provide hands on materials that are realistic and practical.
3. To nurture and develop creativity in individuals, which can lead to an aesthetic experience in art.

Procedures:
1. Building principal, music department chair and music staff held a series of meetings to discuss the use of computers in the general music classroom.
2. Staff representatives visited music stores and Berklee College of Music.
3. Through the collaboration with Berklee School of Music and the New England Conservatory of Music, a 16 week music lab course was developed.
4. The music lab was set up and the staff implemented the course.

Materials available:
Tape of student-produced music

Grant type:
Implementation

Contact:
Edward M. Hagarty
John J. Ahern Middle School
Mechanic Street
Foxborough, MA 02035
(508) 543-1610



C.A.R. Keys (Computer-aided Research) Framingham

Curriculum areas:
All

Grade levels:
9 through 12, special needs

Equipment:
Three workstations:
1. On-line workstation: IBM PC, modem, dedicated phone line, printer
2. Off-line workstation: IBM PC XT with two floppy and one hard disk drives, CD-ROM drive
3. Off-line station for Infotrac TOM CD-ROM magazine index. Requires PC, CD-ROM drive, and printer

Materials:
Software: Telecommunications, Knowledge Index tutorial disk, library skill tutorial disks, CD-ROM reference disks: Encyclopedia and MS Bookshelf, subscription to TOM CD-ROM service, TOM microfiche backfiles.
Other: Subscription and deposit account for Dialog and CompuServe, CLASSMATE materials, Dialog teacher training seminars

Personnel:
One librarian, one half-time aide
Assistance from the computer coordinator, computer aide, teachers and a grade administrator.

Description:
"Computer Aided Research" (C.A.R.) teaches and reinforces the basic library research skills, which many students lack, and reaches those students for whom libraries are unexplored terrain. It has enormous impact on the quality and currentness of information available in the library, and it increases our overall visibility and responsiveness to school needs. The program has introduced and de-mystified on-line database retrieval and CD-ROM technology for learners of all ages, types and interests.

Objectives:
1. To set up three computer workstations with appropriate hardware, software and peripheral materials.
2. To provide teacher training for computer research practice and curriculum planning.
3. To implement three curricula: the "Connections" unit for our deaf students, the "Data DisKits" unit for freshmen enrolled in the current issues course, the "Adopt a Compound" unit for chemistry classes.
4. To publicize the project.

Procedures:
The project began with a summer workshop for librarians and computer coordinators. A series of teacher workshops began in the fall. An on-line workstation was set up and a TOM workstation was on loan. Students were involved at all stages of implementation and were often relied upon to get the software running. All library patrons currently use the TOM index. On-line research is used by both teachers and students.

Recommendations:
C.A.R. KEYS has generated new enthusiasm for both research and technology among students, faculty, administration and the community at large.

More classroom instructional time would be helpful to students. As teachers become more familiar with the benefits of the technology, we expect they will allot more time in the curriculum for it.

Materials available:
Resource manual documenting activities, curriculum applications and publicity. Handouts for application to specific curriculum areas.

Grant type:
Implementation

Contact:
Ann Klein, Librarian
Framingham North High School
A Street
Framingham, MA 01701
(508) 877-3361

Integrated Learning System Laboratory
Gloucester

Curriculum areas:
Reading, math, and language arts

Grade levels:
1 through 5

Materials:
Equipment: A 24 station computer network with host computer, CD-ROM player and system printer
Software: Integrated Learning System comprised of basic skills inventory, 1800+ lessons, management system

Personnel:
Integrated Learning System teacher and part-time aide

Description:
The purpose of this project is to provide professional development that focuses on coordinating the efforts of the classroom and the Intergrated Learning System, and utilizes educational technology to provide each participationg student with a comprehensive, individualized skill development program.

Objectives:
1. To increase reading, language arts and math performance of participating students as measured by appropriate evaluative instruments.
2. To orient and train classroom teachers in Integrated Learning System instruction.

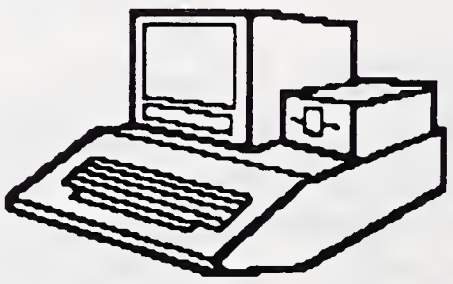
Procedures:
1.Conduct orientation and training sessions for teachers.
2. Develop format and materials that allow for Integrated Learning System coordination.
3. Provide each participating student with 60 minutes of Integrated Learning System reading, language arts, and math instruction per week.

Recommendations:
This project can best be used by educators to help provide:
a. Effective coordination of basic skills services.
b. Greater "time on task".
c. Higher student achievement in reading, language arts, and math.

Materials available:
The Integrated Learning System Lab, located at the Fuller Elementary School, is available for visitor tours by appointment. Contact the Principal's Office at the Fuller School. (508) 281-0559

Grant type:
Implementation

Contact:
Robert Teel
Gloucester Public Schools
Administration Building
Blackburn Center
Gloucester, MA 01930
(508) 281-4311



Interactive Television
Hampshire Educational Collaborative

Curriculum areas:
All

Grade levels:
K through 12

Personnel:
Principals and administrators within the collaborative
Contact with outside resources

Description:
This project is investigating the feasibility of implementing a distance learning program for the high schools of Hampshire County. The result of this project will be a report containing the options for and costs of providing such a program.

Objectives:
The goal of this project is to use video, audio and communications technology to enable students and teachers in different school systems to experience a "live" teaching situation.

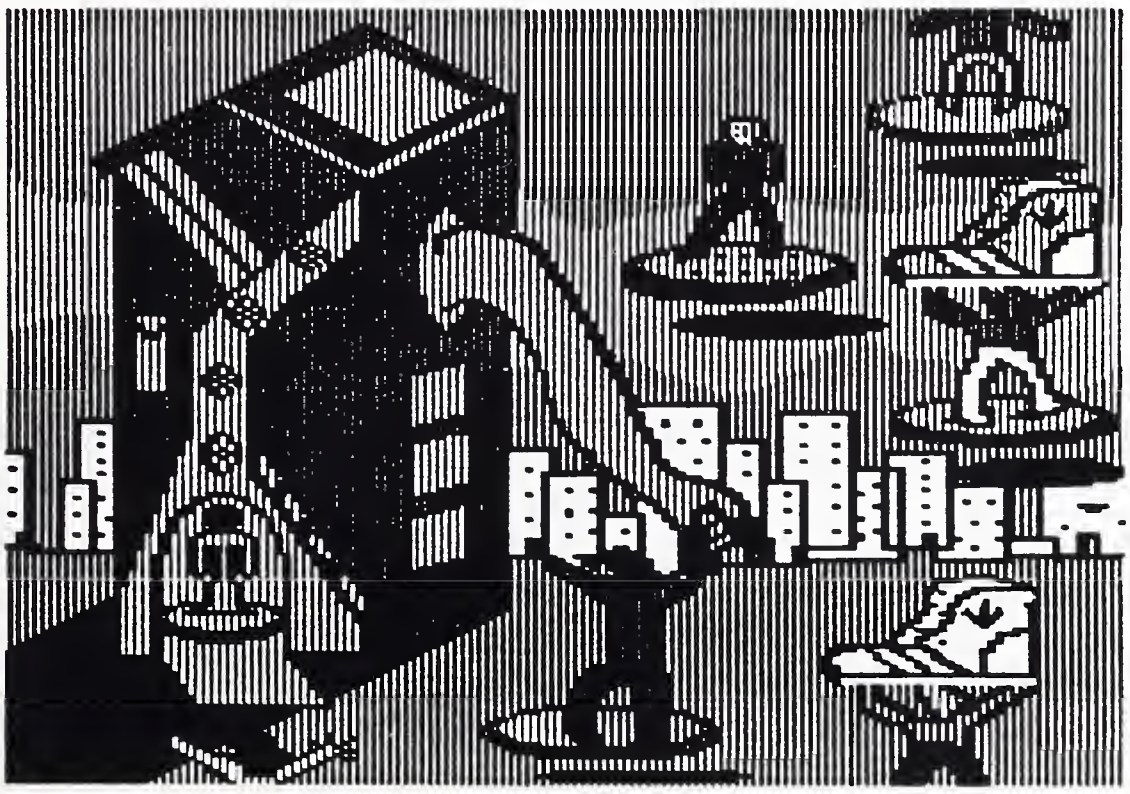
Procedures:
The planning committee met with Massachusetts Corporation for Educational Telecommunications (MCET) to discuss the project. MCET met with Continental Cablevision to ask for advice. University of Massachusetts engineers have provided preliminary data on costs, and the planning committee is preparing a report on the recommendations.

Recommendations:
This type of planning project is absolutely a necessary first step to establishing a complex television network.

Materials available:
A report on the feasibility and economic impact of interactive television in Hampshire County.

Grant type:
Planning

Contact:
Earle C. Batchelder
Center School
36 Hadley Satreet
South Hadley, MA
(413) 534-4563



Joey Key

Writing Across the Curriculum
Haverhill

Curriculum areas:
All

Grade levels:
5 and 6, bilingual students

Equipment:
14 Apple IIe, computer carts

Materials:
Software: AppleWorks, Magic Slate

Personnel:
Computer coordinator, writing coordinator, teachers

Description:
The computers support and extend school efforts in the areas of process writing and computer education. Using a peer counseling model, teachers have been trained by the computer specialist and the writing coordinator to integrate process writing and word processing strategies into their classrooms.

Objectives:
To improve student written communication skills through the use of writing strategies and word processing.

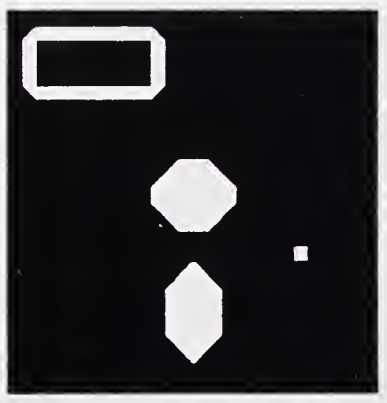
Procedures:
Students proceed through the various stages of the writing process and have the opportunity to conference with writing coaches. The writing coach and classroom teacher show students how to use a word processing package to edit their work and prepare it for publication.

Recommendations:
The project promotes a closer relationship between the writing program and the computer curriculum. The two areas are interrelated and can be mutually supportive. The strength of the program lies in the cooperation among the writing coaches, the classroom teachers, and the computer coordinator. The program, however, is still limited in some respects by the number of computers available in classrooms.

Materials available:
"Haverhill's Experiences with Process Writing"

Grant type:
Implementation

Contact:
John Phelan, Jr.
Haverhill Public Schools
4 Summer Street
Haverhill, MA 01830
(508) 874-3421



Technology Education: Engineering
Tech Planning
Holliston

Curriculum areas:
Engineering technology, physics

Grade levels:
10 through 12

Equipment:
IBM compatible (Leading Edge)

Materials:
Software: Computer-assisted drafting software

Personnel:
Technology education instructor, physics teacher

Description:
This project provided for the development of a plan to integrate math and science curricula with CAD technology. This plan also includes using CAD applications to learn the concepts and principles of physics.

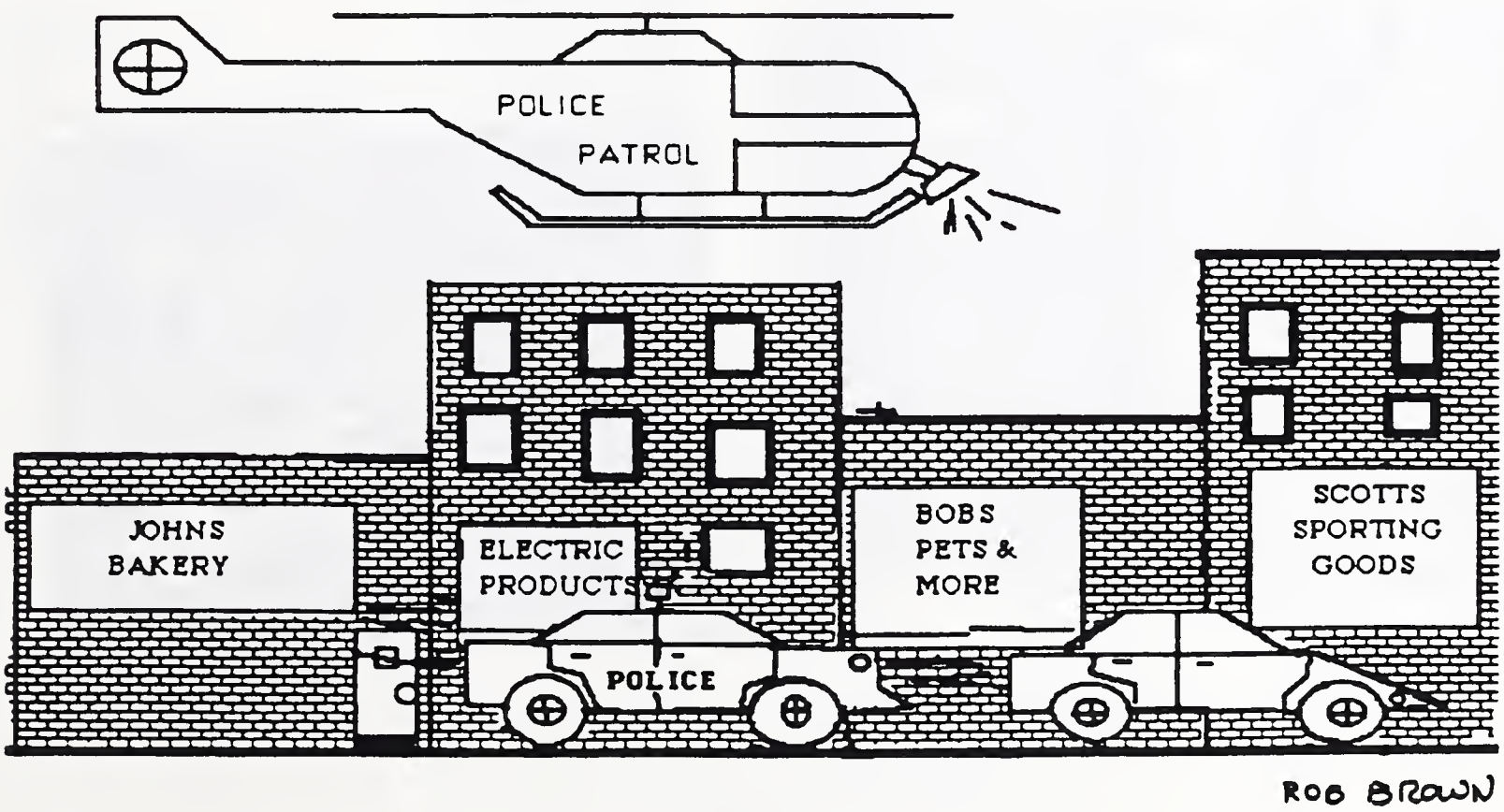
Objectives:
1. To develop the sequence of curriculum, linking physics with the principles of engineering technology.
2. To integrate the academic area of physics into the realm of technology education.

Procedures:
Teachers met to discuss the objectives of the project. They were provided time and resources to share ideas and give each other instruction in the related areas of concentration. Higher education resources were provided to the staff, and teachers were provided the means to attend conferences related to the objectives.

Recommendations:
This project needs creative curriculum leaders to work with the targeted teachers.

Grant type:
Planning

Contact:
Dr. Robert J. Berardi
Holliston High School
Hollis Street
Holliston, MA 01746
(508) 429-5060



Teacher Training in Computer-based Science Instruction
Holyoke

Curriculum areas:
Junior high school science. This project can be applied to life science, physical science, earth science, physical and health education.

Grade levels:
6 through 9

Equipment:
Apple IIe computers and printers

Materials:
Software: HRM- Heat and Temperature, Sound, Light, Motion, Geology in Action, Heredity Dog, Body Electric, Cardiovascular Fitness, and Experiments in Chemistry; Audubon-Grizzly; Sunburst-Voyage of the Mimi; National Geographic-Zoo
Other: Standard laboratory equipment

Personnel:
Twelve trained junior high teachers

Description:
This training project focused on the teaching of critical thinking skills, using the microcomputer as a tool in the science classroom. More than 10 workshops were held and twenty-five teachers attended in-service training, including three from the bilingual program. Topics covered included commerical software programs for physical, life and earth sciences.

Objectives:

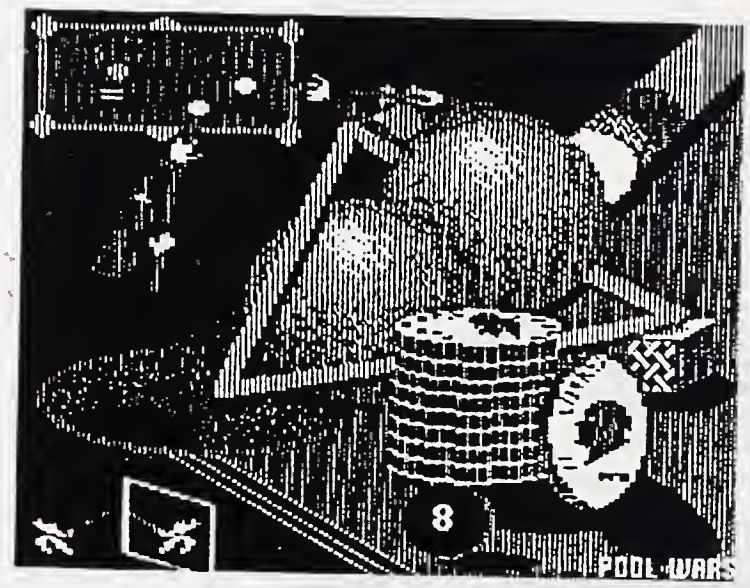
1. To provide in-service training in science for junior high school teachers, including transitional bilingual education teachers.
2. To train teachers in the use of the micro-computer as a hands-on experimental tool to enhance the teaching of critical thinking and problem-solving skills.
3. To increase the use of computer-based science curriculum units in the areas of physical and life science in grades 6 through 9.

Procedures:
We identified teachers in grades 6 through 9 as our target group. We selected trainers from within the system, who had extensively used the software, to share their knowledge. The materials used were those purchased during the preceding year through a Chapter 188 Science Kit Grant. The use of the materials with students ranged from full-scale pilot projects to short-term use for individual class presentations.

Recommendations:
Teacher turnout was greater than expected, suggesting that there is teacher support for this type of program. The strength of such a project is that it gives teachers the necessary training in the use of available software. Without this training, software and other materials are often not understood nor utilized. The only weakness that we identified is a need for more computer time and computers that will be totally designated for the science department.

Grant type:
Implementation

Contact:
Steve Murray
Holyoke High School
500 Beech Street
Holyoke, MA 01040
(413) 534-2090



David Lee

Computers and Teachers in School
Lawrence

Curriculum areas:
Reading, language arts, social studies

Grade levels:
1 through 8. All students, including developmentally delayed students.

Equipment:
Apple IIe, Wang PC (IBM compatible)

Materials:
Software: commercial software programs, Wang database and Wang word processing programs

Personnel:
Classroom teachers, teacher aides, and program director

Description:
Teachers and students were instructed in the use of various applications using both the Wang PC and the Apple IIe computers. Students were encouraged to use the word processor to create, edit, and print writing assignments, including creative writing and poetry. Commercial software was used to develop problem-solving skills, note taking, investigative skills and introduction to database. Younger students used the computer to develop shape, number, and letter recognition.

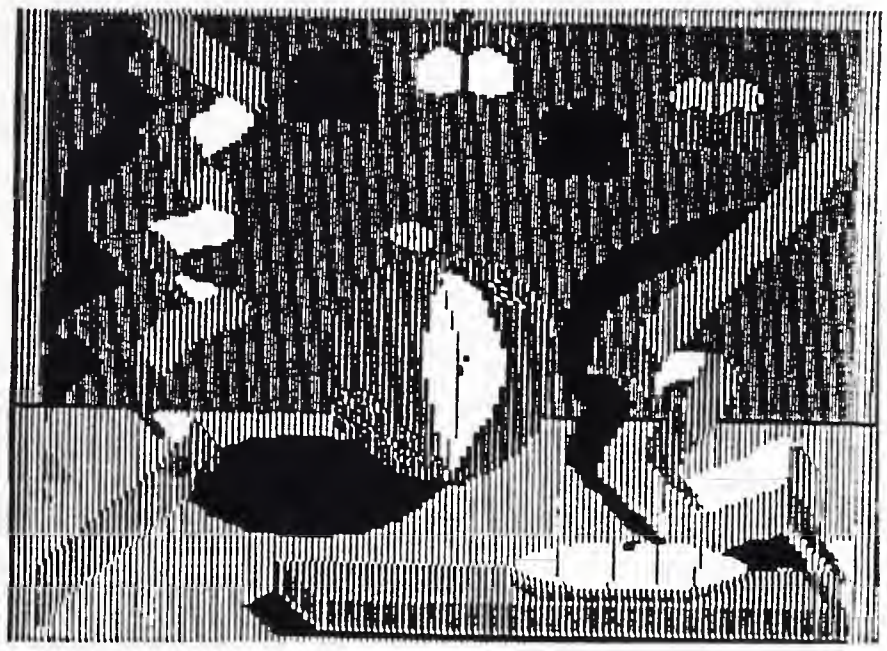
Objectives:
1. To encourage and assist teachers in the development of individual computer skills.
2. To assist teachers in transferring these skills to their individual classrooms, where students used the computer either individually or in small groups within the various academic areas.

Procedures:
Teachers and students were encouraged to use the computers with commercial software to compose, construct, and illustrate writing assignments and classroom displays. As interest spread, varied groups of classes were included. Commercial software was used both for computer-assisted instruction, and a tool for teachers and students.

Recommendations:
All the people who were involved demonstrated a marked improvement in motivation and interest in the use of the computer as an integral and essential part of modern education.

Grant type:
Implementation

Contact:
Bryan T. Cusack
Robert Frost School
33 Hamlet Street
Lawrence, MA 01842
(508) 975-5941



Ellen Hughes

Lexnet Connection
Lexington

Curriculum areas:
Science

Grade levels:
5, 6, and 9

Equipment:
8 Apple IIGS, 9 Sytek modems, cable T.V. I-loop drops in rooms, 1 Macintosh, 1 Hayes modem

Materials:
Software: Mousetalk, Red Ryder Host
Other: phone line

Personnel:
Systems operator, project manager, curriculum developer, 8 classroom teachers

Description:
A local bulletin board was set up so that classroom teachers and librarians could use electronic mail, share science data, and discuss issues. Teachers were trained during workshops and individuals were helped to apply the network's capabilities to their needs.
In the spring, students used the network to share data (and their interpretations) regarding the recycling of paper and the quality of water in the major ponds and streams near their buildings. Some teachers used Lexnet BBS as a telecomunications link to the "outside world."

Objectives:
1. To use telecommunications to improve science instruction. (Successful sharing of real data makes science lively and relevant.)
2. To establish a model for telecommunications using the school system's cable T.V. loop.
3. To teach students about local pollution problems: recycling, waste management, water quality.

Procedures:
1. Set up a bulletin board and create a manual and a draft for the curriculum.
2. Train teachers and librarians.
3. Assist building teams with organizational and content area needs.
4. Revise curriculum based on teachers' review and feedback.
5. Students do research and field work, then share data regarding their local environment via bulletin board. They also discuss the results on-line, analyze data in class with a database, and receive compiled data via the bulletin board.
6. Students analyze the results of the study and publish a newsletter.

Recommendations:
Shared science data about the town's recycling program, water quality, and other related topics can bring science into everyday life. Even without an electronic network, this could be done. The bulletin board adds the ability to discuss and question the results on-line. Other school systems might implement these curriculum units by accessing this information on-line.

Teacher training is more effective when held close to the time of the class unit.

Having three staff to consult with individual teachers (science coordinator, the systems operator, and the computer specialist) is advantageous.

Materials available:
Manual for Lexnet Bulletin Board, videotape of project activities, science curriculum unit on water quality, technical specifications for networking.

Grant type:
Implementation

Contact:
Beth Lowd
Clarke Middle School
17 Stedman Road
Lexington, MA 02173
(617) 861-2480

Island Voice
Martha's Vineyard

Curriculum areas:
All, especially arts, language arts, music, drama, video and journalism

Grade levels:
5 through 12

Equipment:
Video cameras, editing machine(s), microphones, lights (optional)

Materials:
Software: (optional) to produce Apple-generated title screens for video-tapes.

Personnel:
A teacher with dedicated classroom and planning time, video production consultant, partnership with town cable TV station (if possible), video club supervisors.

Description:
With the help of consultants, the program provided all schools with training in all aspects of video production. Key activities were: a broadcast jounalism course culminating in the airing of student news footage on cable T.V. and a student intern program at the cable T.V. station.

Objectives:
1. To use video as an instuctional tool for both teacher self-evaluation and student peer and self-evaluation.
2. To provide unmotivated or language deficient students with video process writing training to improve their language skills.
3. To foster communication and cooperation between the schools and the community via a televised panel and audience discussion on community issues.

Procedures:
1. Video clubs were organized in each of the five schools. Their works included video programs on sports events and drama productions.
2. An intern program was established. It involved two students per semester working at the cable station.
3. Local newspaper staff and a T.V. news journalist offered a broadcasting/jounalism course in February.
4. A panel discussion was held and telecast each semester.
5. Class-originated videos were on-going.
6. Teachers began developing instructional videos on key topics, such as "Whole Language Learning" in the spring.

Recommendations:
Video is a powerful and motivating tool in teaching writing and improving public speaking. It is also a powerful tool for the critique of performance for both teachers and students. The language arts teachers have developed a curriculum for teaching writing that requires collaboration between the music and language arts teacher.

Sharing student video work in class and on T.V. brings the school into focus in the community and builds pride and self- esteem in the participating students.

All of the above require detailed planning and a commitment on the part of teachers and administrators to be successful.

Materials available:
-Detailed write-up of all aspects of program, including pitfalls.
- Sample videotapes of student work.
- Instructional videotape on "Whole Language Learning" (produced by teachers)

Grant type:
Implementation

Contact:
Deborah Yennie
c/o Superintendent's Office
P.O. Box 639
Vineyard Haven, MA 02568
(508) 693-5706

Audio/Graphics Distance Learning
Medway

Curriculum areas:
Calculus and other areas

Grade levels:
11 and 12

Equipment:
IBM compatible computer with hard drive, Optel Voice Too Modem, speaker telephones

Materials:
Teaching site: PenPad graphics tablet and software, telephone headset.
All sites: Optel telecommunications software, courseware

Personnel:
one teacher, and proctors at each site to administer exams.

Description:
The project teaches BC level Calculus to gifted students in Millis, Medway, and Hopkinton. The students sit at a computer terminal, which serves as a blackboard. Students are connected to each other and to the teacher via the Voice Too modems and a teleconference bridge. They can listen to the lecture and simultaneously see everything written on the screen. They can interrupt with questions at any time, and the other students hear the interaction and see the correspondence as well.

Objectives:
To pool the resources of these three communities that have small enrollments, and offer a special course with a few students at each school and only one teacher conducting the course.

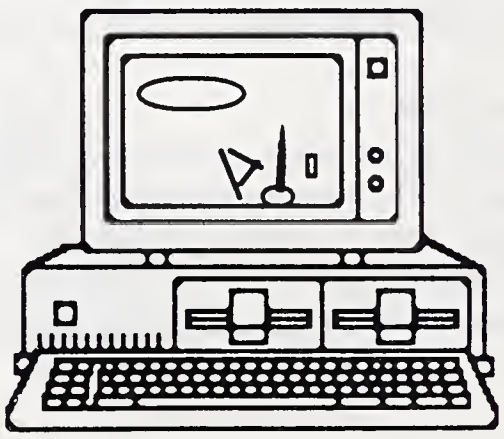
Procedures:
The course is taught every day. Exams are administered by proctors later in the day to avoid shortening class time. Homework is mailed to the teacher once a week, then corrected and mailed back. Complete copies of the teacher's solutions are sent to students after their homework is collected. Two or three times a week, homework help is offered during class time. Other than this assistance, students are on their own. Exams are given every two weeks, and grades are based on homework and exams.

Recommendations:
Students initially felt that a lack of visual contact with the teacher was a weakness. When they wanted extra help, they felt it was more inconvenient to call on the phone than to walk into a classroom. At first, much on-line extra help was required, but more and more the students began to rely on one another and work together. Seldom is on-line help required now, and the results of homework and tests are excellent.

Materials available:
A videotape, limited courseware

Grant type:
Implementation

Contact:
Arlene Cram
Medway High School
45 Holliston Street
Medway, MA 02053
(508) 533-2703



Educational Telecommunications Systems
Melrose

Curriculum areas:
All

Grade levels:
7 through 12

Personnel:
1 director and 2 instructional staff

Description:
The project is designed to investigate which aspects of telecommunications (access and skills) would be most beneficial to the Melrose schools and what is needed to provide them (equipment, software, subscriptions, training). A committee of secondary teachers and department heads was formed; visits were made to school systems that already had telecommunications; and a public demonstration on CompuServe Information Service was attended by students, parents and teachers.

Objectives:
1. To determine installation, equipment and operational costs required to fully implement this project.
2. To identify instructional uses of telecommunications services and activities for specific subject areas, as well as for more global educational objectives.
3. To generate interest in the application of this technology within the school.

Procedures:
The telecommunications committee investigated costs and services of the system by site visits and contact with appropriate resources. A sample of commercial services were accessed, programs were downloaded and made available to members of the school community. Sample searches were shown to students doing research papers. Students, parents, teachers and administrators were provided a hands-on demonstration of telecommunications procedures and services.

Recommendations:
The project created an awareness of readily accessible instructional materials and support services available to students and educators at all levels. The chief weakness of the project lies in the limited time given to off-line and on-line training. Educators who look to this project as a guide should note the value of site visits and the need for a program to train users before the budget limits and access policies are established.

Grant type:
Planning

Contact:
Mr. Thomas Humphreys
Melrose High School
360 Lynn Fells Parkway
Melrose, MA 02176
(617) 662-2000

Writing and Utilities for the Classroom
Monson

Curriculum areas:
All

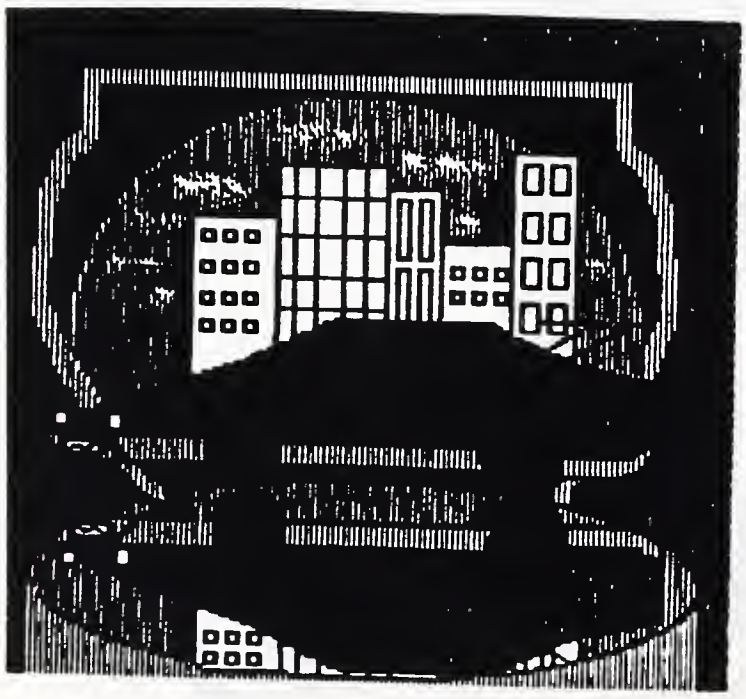
Grade levels:
6 through 12

Equipment:
Apple IIe computers (one in each of four sixth grades) and a lab of ten in the junior/senior high school

Materials:
Software: AppleWorks and curriculum-based software

Personnel:
A computer applications coordinator and teachers in grades 6 through 12.

Description:
New software was purchased to improve writing skills, specifically for the 6th and 10th grade English classes. AppleWorks was made available in all curriculum areas where students have access to a computer. Other curriculum-based software was also purchased and used in classes. Teachers were involved in recommending which software should be purchased. The applications coordinator assisted the teachers both individually and through an in-service course to develop procedures for student participation.



Matt Beauchemin

Objectives:
1. To encourage the use of computers in the school system.
2. To improve students' writing skills.
3. To improve teachers' abilities to use curriculum-based software in their daily lessons.

Procedures:
Both teachers and students were trained in the use of AppleWorks in three classroom sessions. In addition, on a weekly basis, they were instructed on how to use specific software in the classrooms. Examples of a few pieces of software used were: The Geometric Supposer, Missing Links, Planetary Construction, and The Print Shop. The computer coordinator instructed these classes and offered an in-service course of five sessions. After instruction was completed, students were allowed to use the software in the computer lab during their study halls and after school.

Recommendations:
The use of computers is encouraged by allowing teachers the opportunity to purchase software for their areas, as well as providing them with training necessary to prepare them for the implementation of this software in their classes. Guidance and continual assistance should be easily accessible to teachers. Teacher use of computers will be discouraged by the inability to access the computer and limitations in the availability of quality software.

Materials available:
Hand-outs on the use of AppleWorks.

Grant type:
Implementation

Contact:
Edmund Lucas
Monson Jr./Sr. High School
25 Thompson Street
Monson, MA 01057
(413) 267-4811

Mathematical Objectives through Visual Education (MOVE)
New Bedford

Curriculum areas:
Mathematics

Grade levels:
5 to 6 grades

Equipment:
Apple IIe professional color system, Pioneer 909 laserdisc players

Materials:
Software: System Impact Program-Mastering Fractions, Mastering Decimals

Personnel:
Program director, tutor/teachers

Description:
This project provides interactive videodisc technology for tutorial applications with individuals and small groups. In collaboration with the district's remedial program, this project provides remedial assistance to ten schools at the elementary level. The interactive videodisc program, System Impact Core Concept Program, on mastering fractions and decimals, was chosen. This innovative program diagnoses student difficulties and provides appropriate learning activities.

Objectives:
1. To integrate interactive video technology into the mathematics curriculum.
2. To provide assistance to fifth and sixth grade students in mastering core concepts in mathematics by complementing their educational needs through interactive visual learning.
3. To pilot a model educational program utilizing interactive video technology in a tutorial learning environment, which can be adapted to other disciplines and other grade levels.

Procedures:
1. At the planning stage, teachers and the director of the program met to research, review, and evaluate software and equipment for the project. Additional information on the utilization of this technology was provided by the Merrimack Education Center.
2. Once the project was funded, tutor/teachers started to implement the program. All the students were tested and the tutor/teachers designed interactive programs to meet individual needs in the areas of fractions and decimals.
3. Students completed remedial exercises as needed using the computers and the Systems Impact Program. Through small group discussion, students discussed the value of the visual display in mastering concepts in fractions and decimals.
4. Tutor/teachers and the program director used their experience with this program to provide validated assistance in adapting this program to other learning environments.

Materials available:
Videotape of project.

Grant type:
Implementation

Contact:
Roger Robitaille
New Bedford Public Schools
Instructional Media Center
455 County Street, Room 131
New Bedford, MA 02740
(508) 997-4511

Principles of Technology
Northboro/Southboro Regional

Curriculum areas:
Technology education, vocational education, physics, math

Grade levels:
11 and 12

Equipment:
Principles of Technology lab stations

Materials:
Workbooks

Personnel:
Science and technology department heads and staff

Description:
The science and technology departments of Algonquin Regional High School are implementing the nationally developed program, "Principles of Technology", for eleventh and twelfth grade students. The course will provide integrated skills in technology to those students entering the work force, as well as those going on to college programs.

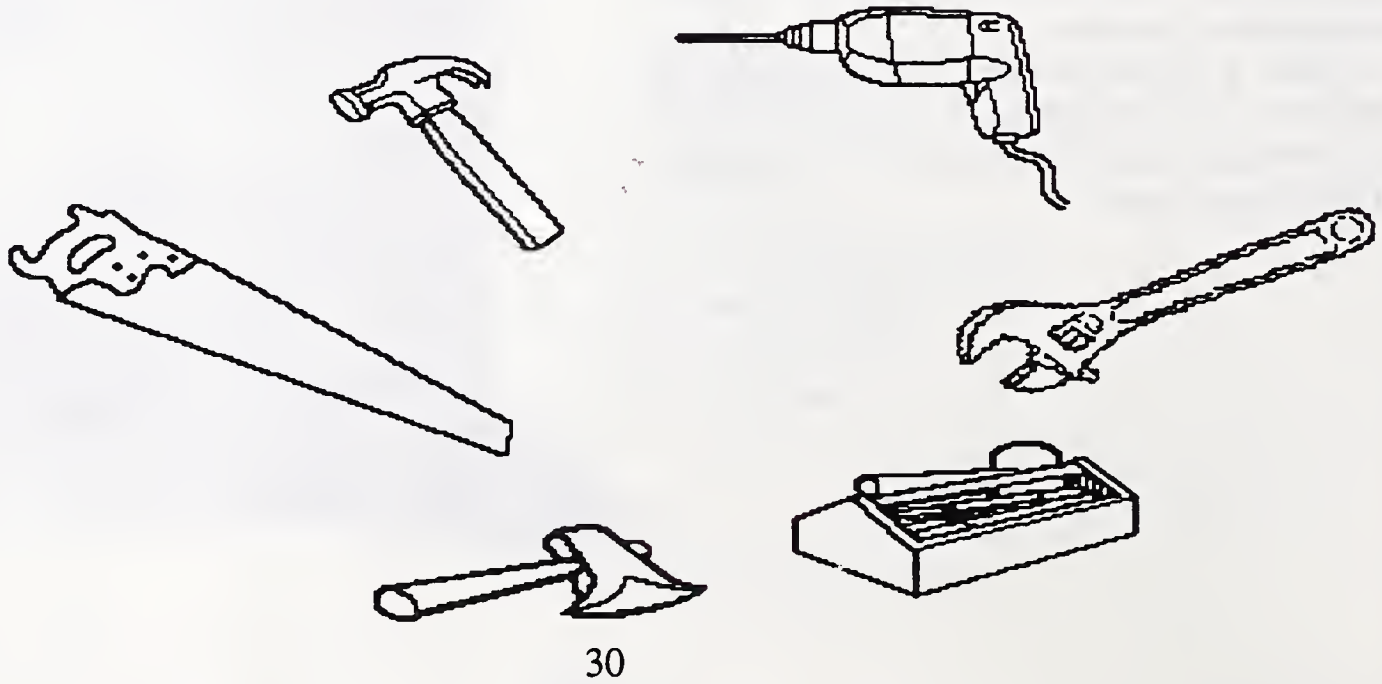
Objectives:
1. To enhance the science, math, and technology education curricula through an interdisciplinary approach to the technical principles and concepts of technology.
2. To develop an alternative hands-on approach to learning sophisticated applied physics.
3. To improve students' math, science, and technical problem-solving skills in preparation for meeting current business and industry needs.
4. To increase communication between the science and technology departments.

Procedures:
1. Science and technology staff attended a summer workshop in preparation for the project.
2. In the fall, students in two class sections were introduced to the program.
3. Students had hands-on laboratory experiences in: force, work, rate, resistance, energy, power, and force transformers. They were evaluated with performance and knowledge testing.

Recommendations:
This program has been succesfully implemented in a number of Massachusetts vocational schools. The program conducted at Algonquin Regional will serve as prototype for comprehensive schools in the central Massachusetts area.

Grant type:
Implementation

Contact:
J. Govan Baird
Algonquin Regional High School
Bartlett Street
Northboro, MA 01532
(508)393-2885



Technology for the Arts
Oxford

Curriculum areas:
Music, arts, and graphic arts

Grade levels:
9 through 12

Equipment:
Macintosh computers, synthesizers, sequencer, scanner

Materials:
Software: Professional Composer, Performer, SuperPaint, MacPaint

Personnel:
Subject area teachers proficient in the use of computers.

Description:
The project has introduced state-of-the-art technology to these subject areas. Students are attracted and motivated by these exciting new tools. To integrate skills learned in the structured program, students are given "exploratory time" to work on their own projects.

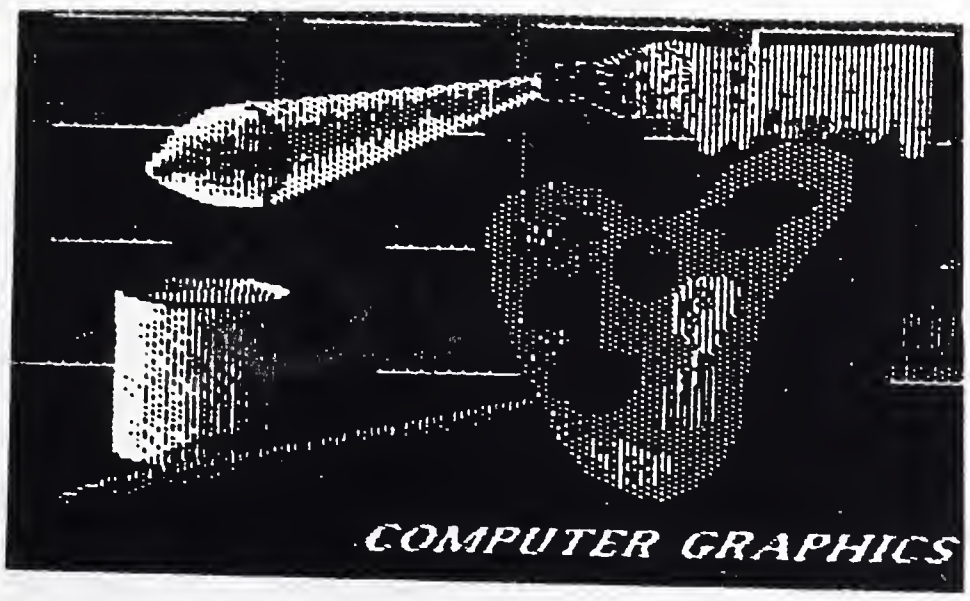
Objectives:
1. To attract new students to the art, music, and graphics departments.
2. To update instructional methods and materials in the arts with the aid of technology.
3. To disseminate information to other school districts.

Procedures:
In the field of music, students are taught reading and keyboard performance skills. They are then capable of working on their own compositions. With the aid of the equipment, students can compose easily and receive feedback instantaneously. The experience of creating their own music, the ability to obtain immediate results, and the opportunity to share their work with others motivated students far beyond our greatest expectations. Similar curricula were developed for art and graphics arts.

Recommendations:
This project demonstrates that many students are interested in music and art, particularly at the high school level. This type of program can revitalize the arts and the departments that adopt this new approach. The curricula are most effective when students are allowed ample time to work on their own projects after they are familiar with their subject areas.

Grant type:
Implementation

Contact:
Martin Gilman
Oxford High School
Main Street
Oxford, MA 01540
(508) 987-8127



Avi Schachter

Library Computerization and Renewal
Pelham

Curriculum areas:
Relevant to all curriculum areas.

Grade levels:
K through 6

Equipment:
IBM or compatible with 20 megabyte hard drive and 640K RAM

Materials:
Software: Winnebego CAT (catalog)
Other: portable bar code (optional)

Personnel:
Library staff

Description:
The Pelham Elementary School library card catalog was completely revised, updated, and entered into the Winnebego CAT (catalog) program on a computer with a 20 megabyte hard drive. Students and teachers have been trained in the use of the program. The computerized catalog now serves as the only catalog in the school library. It allows students and staff access information about the materials in the library by title, author or subject. When fully implemented it will allow access by key word searches as well.

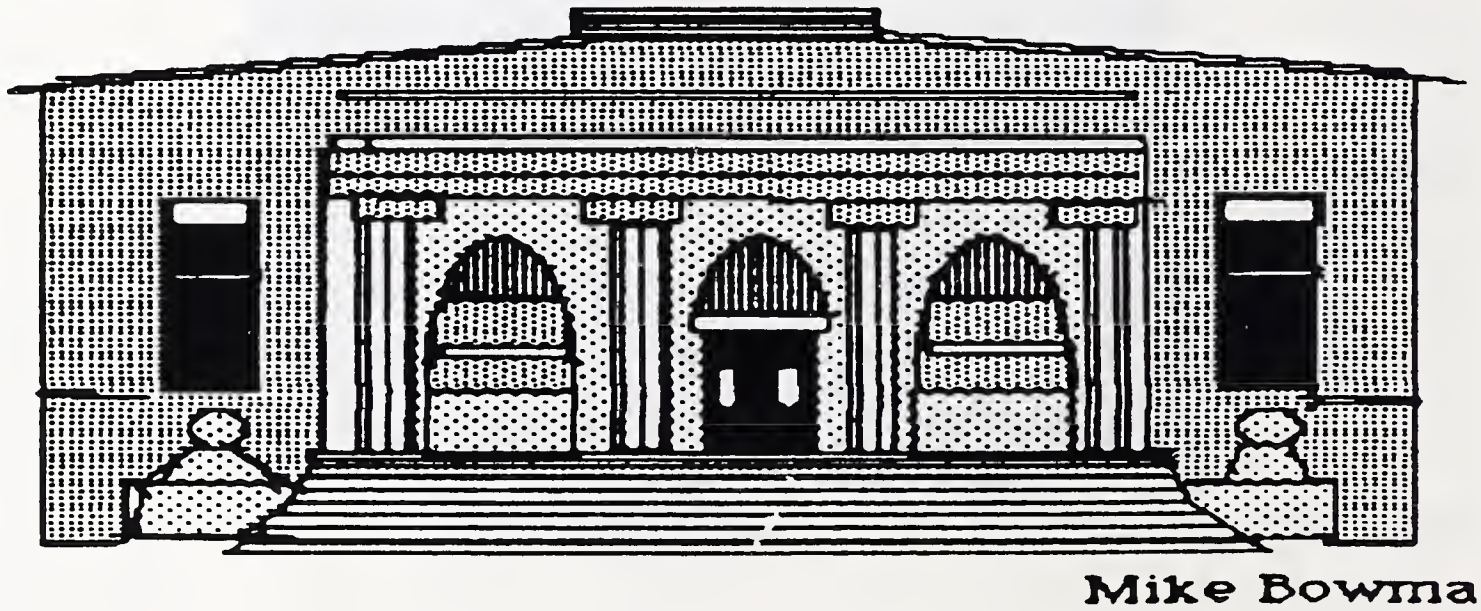
Objectives:
1. To recreate and computerize the library card catalog.
2. To increase the use of the library by students and staff.
3. To give students some experience using a computer database.
4. To reintroduce the district's library skills curriculum using the new computerized catalog.

Procedures:
1. Update shelf list (card catalog entries).
2. Get districtwide agreement on procedures and codes to allow for future coordination among schools when other schools computerize their libraries.
3. Enter data into the computer.
4. Print bar code labels for each book, etc. (This is done by the computer.)
5. Encourage teaching staff and students to use the new system.

Recommendations:
Any school that can obtain the needed software and hardware can implement this project. From our experience we recommend that the data entry either be purchased from a professional library source or be done by library staff, not clerk typists. Considerable time must be allowed for this process.
We found the program easy to use and teach once the data was properly entered.

Grant type:
Implementation

Contact:
Russ Vernon-Jones
Pelham Elementary
45 Amherst Road
Pelham, MA 01002
(413) 253-3595



Mike Bowma

Writing Across the Curriculum
Pioneer Valley Regional

Curriculum areas:
Writing in all content areas

Grade levels:
7 through 12

Equipment:
Apple IIGS computers, Imagewriter II and Laser printers, photocopier

Materials:
Software: AppleWorks, AppleWorks IIGS, and a variety of other software packages were integrated into the program.
Other: Copy masters and resource books

Personnel:
Teacher, part-time aide (funded by the district)

Description:
Students and staff will be instructed in computer-assisted process writing in a computerized writing lab. All students will have access to the lab and process techniques for specific writing assignments and for general writing competency enhancement. Intensive training for content-area teachers will be conducted to extend and integrate this approach into the mainstream curriculum.

Objectives:
1. To enhance the transfer of writing skills gained in the computer lab to student writing in all areas.
2. To increase students' motivation to write and increase writing fluency.
3. To teach students and teachers word processing and process writing skills.
4. To increase student competence in thinking, expressing, writing, planning and carrying out written tasks, using appropriate language mechanics, and use of technological tools.
5. To demystify the writing process.
6. To increase the use of process writing and word processing tools by teachers and their students.

Procedures:
Students will be instructed in word processing and process writing on the computer. After students have learned those procedures, they will progress through a series of sequential tasks designed to enhance writing skills and/or projects assigned by content-area teachers.

Meanwhile, teachers will receive training in the use of the computer for word processing, and in theory and practice of using computers for process writing. In-service instructional time will provide the staff with initial acquaintance with the use of the word processor for developing and creating lesson plans, for "computerizing" activities already in use in class, as well as for developing activities that capitalize on the technology and the motivation computers can provide.

Recommendations:
The program should be integrated into virtually all aspects of the student curriculum in order to be most effectively transferred to everyday use. The program is most valued and motivating for both teachers and students when it stresses writing for self-determined purposes.

Teaching a quarterly course at the same time as a year-long course makes mangement of tasks complicated at times for the teachers.

Materials available:
Several disk files, worksheets, a bound notebook, and slide show are available.

Grant type:
Implementation

Contact:
June Kuzmeskus
Pioneer Valley Regional School
Route 10
Northfield, MA 01360
(413) 498-2931

Marconi I
Quabbin Regional

Curriculum areas:
English, social studies, science

Grade levels:
5 and 6

Equipment:
Ham radio, antenna, etc.

Materials:
Computer connected to the radio receiver.

Personnel:
Teacher who is FCC licensed.

Description:
The goal of this project is to make science and social studies more meaningful to children through the motivational impact derived from talking directly to people involved with space science, satellites, laboratories and telecommunications from all over the world. The children have an opportunity to access information directly from sources, rather than read about them in a second-hand, non-interactive manner.

Objectives:
1. To maintain excitement and enthusiasm in learning as a means of preventing absenteeism and dropping out with at-risk students. This will be done by involving them more actively through the use of the ham radio.
2. To provide an opportunity for more direct, immediate, on-the-spot, "live" learning of cultures, geography, science, through the daily contacting of people through the radio air waves. Thus, textbook learning will be more meaningful and "live".
3. To motivate students to broaden their interests from rural town isolation to metropolitan areas and the wider world beyond.

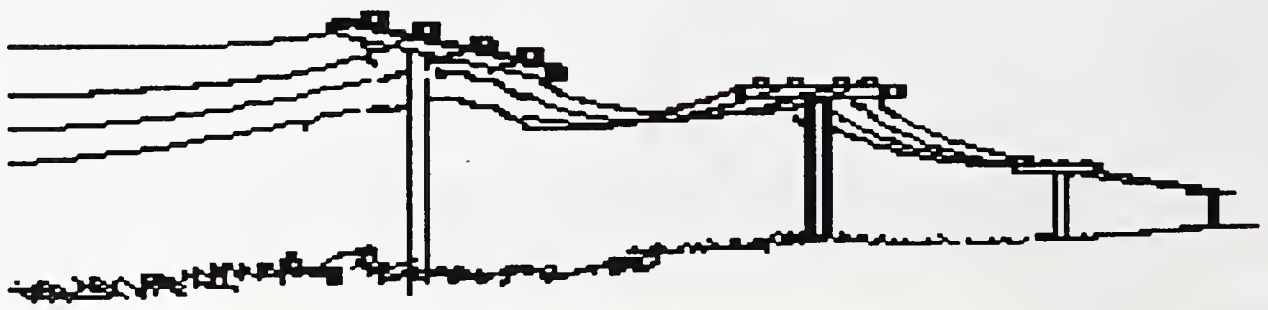
Procedures:
1. The coordinating teacher prepares students and staff to study for their amateur radio license. He also teaches students the use of proper radio protocol.
2. Teachers develop lesson plans to integrate the use of computers into their subject areas. Lesson plans are implemented and evaluated. Changes are made, if necessary.
3. Students use the ham radio to enhance classroom subject content areas. (Coordinator schedules students "on the air," and develops subject area questionnaires for students to use. Students contact people on a daily basis either directly through radio or via computer message.

Recommendations:
'Marconi I' can be used as a model for other schools. The increase in the number of schools involved in communicating and sharing information will benefit all and will improve the program.

The greatest weakness of the program is that the time children can spend on the project is limited. There is no lack of materials. The information and willing, enthusiastic communicators are out there. People are eager to share information with us and assist in other ways. It takes time to access them.

Grant type:
Implementation

Contact:
Albert K. Cormier/ Roger Boilard
Quabbin Regional SchoolDistrict
West Street
Barre, Massachusetts 01005
(508) 355-2055



Project EXCEL II
Randolph

Curriculum areas:
Science, math, social studies

Grade levels:
6, 8, and 10

Equipment:
Apple IIGS with color monitors, ImageWriter printers

Materials:
Software: Voyage of the Mimi lab packs, LEGO-LOGO Blocks, Geometric Supposer

Personnel:
Consultants, administrative assistant

Description:
This project has expanded the integrated use of technology in science, math, and social studies in grades 6, 8, and 10. Major components of the project included teacher training in the use of the Voyage of the Mimi, LEGO-LOGO, and Geometric Supposer.

Objectives:
1. To provide students with realistic images of scientists and to enhance their understanding of science, math, and technology.
2. To help students master principles of the scientific method, which they can apply to their own investigation, and to help them recognize how science and technology can be used to solve problems.
3. To encourage students to develop an interest in science and consider careers in science and technology.
4. To provide teachers with a model for integrating the computer within the classroom curriculum, as well as a new model of science and mathematics education.

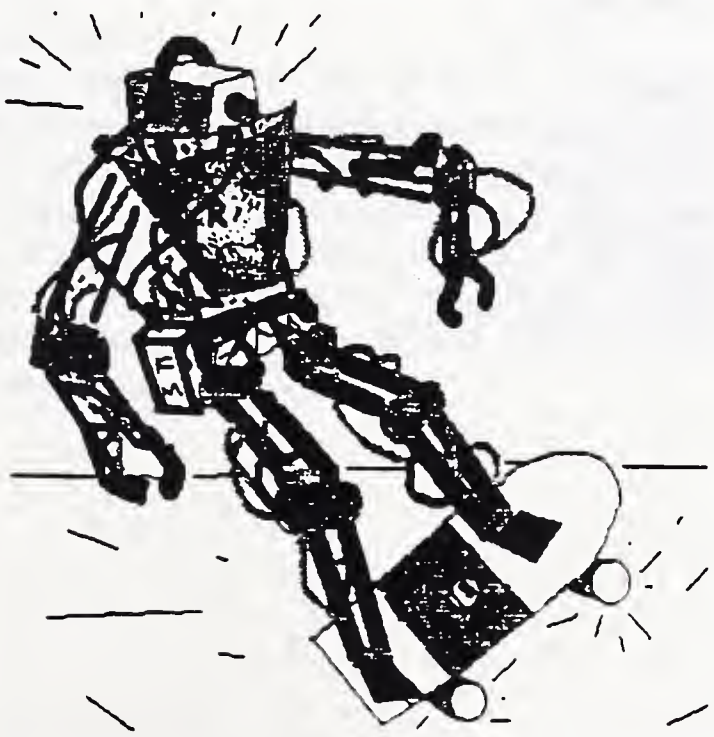
Procedures:
1. Two full days of in-service workshops on the Voyage of the Mimi program were conducted for fifteen teachers at grades 4 to 6. Then teachers piloted the program in their classrooms.
2. Inservice workshops for junior high math and science teachers in the use of LEGO-LOGO were conducted. Activities in math and science classrooms took place during the year.
3. In-service workshops for high school math teachers in the use of the Geometric Supposer were conducted. Selected classes were chosen for piloting.
4. Preliminary evalutions on the three programs were excellent.

Recommendations:
This project focuses on integrating software into specific curriculum areas. The teacher training component and availability of hardware and software are vital to the success of the stated objectives. In addition, subject areas teachers need to be convinced of the program's benefits. The strengths of the program were training offered and the quality of software.

Materials available:
Series of lessons using the three programs

Grant type:
Implementation

Contact:
Dr. Lyn A. Huttunen
Randolph Public schools
Administrative Building
40 Highland Ave.
Randolph, MA 02368
(617) 961-6205



Tim Bithoney

Middle School Multicultural Program
Salem

Curriculum areas:
All

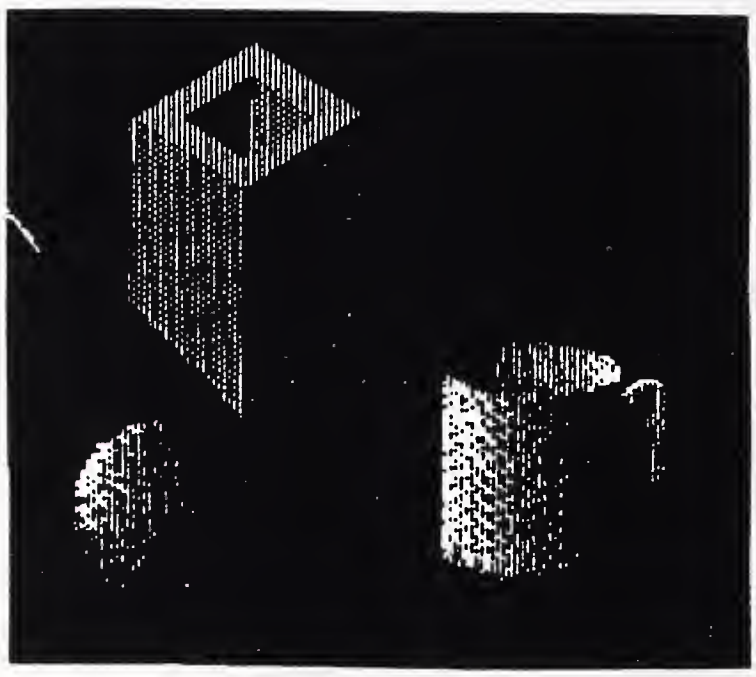
Grade levels:
6 through 8

Equipment:
Computer in every math/science room, computer room with 10 computers, modems, telephones

Materials:
Software: Gemnet Global Telecommunications, Tom Snyder Decisions, word processing software

Personnel:
Curriculum coordinator, librarian

Description:
There were two areas of focus: classroom usage of computers (Tom Snyder's Decisions/Decisions software) and library research usage involving telecommunications (Gemnet telecommunications). Teacher training was provided for the "Decisions" software on grades 6 through 8, and classroom assistance was available for integrating the software into classroom units of instruction. Curriculum coordinators and librarians received training in the use of modems and telecommunications for Gemnet.



Chris Grace

Objectives:
1. To integrate technology into all classrooms.
2. To have all children and teachers go on-line in the library for research and communications purposes.

Procedures:
In order to use the software package "Decisions/ Decisions", the coordinator first trained the teachers. Then the coordinator demonstrated the program to students. The teachers worked together with the coordinator during this process. When the teachers felt comfortable with the use of the software, they would use it with their classes.
For using the Gemnet telecommunication system, the same procedures took place. The coordinator trained the librarians and they in turn trained the students.

Recommendations:
Technology can be very intimidating to some staff. It is important to go slowly and provide as much modeling and assistance as possible. Involve students! They are less intimidated than teachers and can help make computers less threatening to adults.

Making technology part of the supervisory/evaluation effort will promote technology in the schools.

Materials available:
Thematic units for colonization, immigration and revolution are available on loan.

Grant type:
Implementation

Contact:
Robert Pesce
Salem Middle Schools
29 Highland Avenue
Salem, MA 01970
(508) 745-9300x190

Effective Planning for Technology-infused Educational Environment Shrewsbury

Curriculum areas:
All

Grade levels:
1 through 12

Equipment:
Hardware equipment for network (file server, wiring)

Materials:
Software to run network

Personnel:
Outside design team (architectural or planning team) for rooms, network expert for buildingwide network.

Description:
This project provided the necessary practical information for planning facilities for technology. A schoolwide networking plan was implemented, and architectural plans were designed for prototype classrooms at the high school, middle school and elementary school levels. Several features of the architectural plans were then put into place for one of these rooms.

Objectives:
1. To develop prototype facility designs for a variety of future learning environment that incorporate technology.
2. To begin to implement prototype designs in order to test for suitability of design and to develop optimal curriculum strategies.

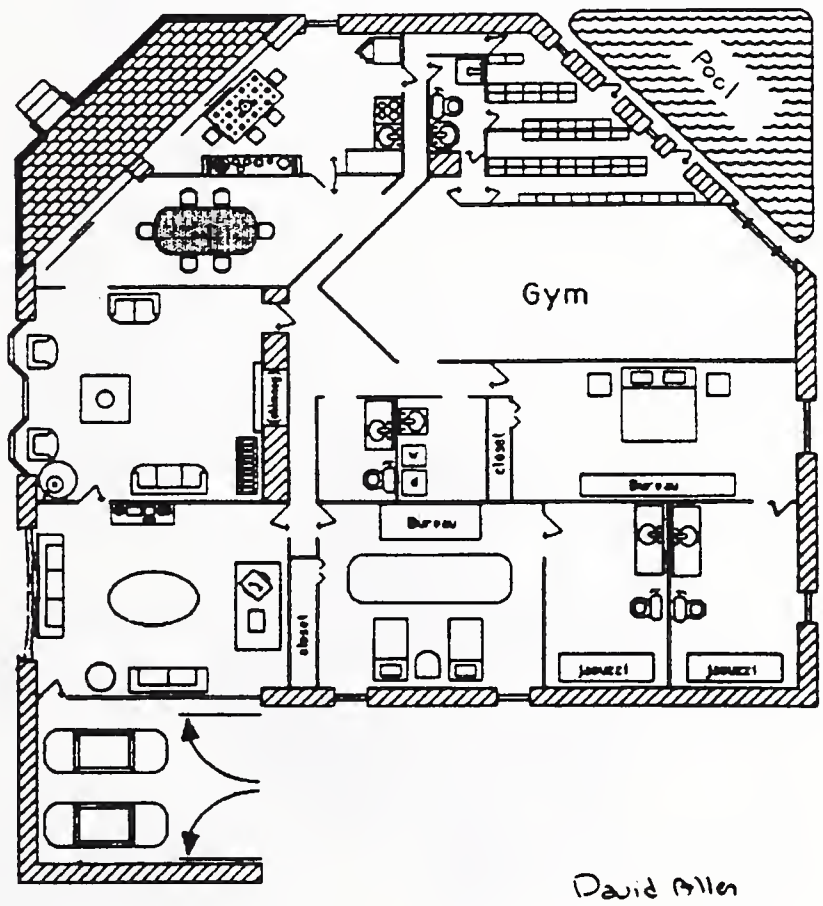
Procedures:
Outside design teams were selected for both the development of the prototype classroom designs and the installation of the building computer network. Staff members at all levels were consulted by the design teams before and during critical stages of the design work. A high school building network and several features of one of the classrooms were installed and tested by appropriate personnel.

Recommendations:
In the fall of 1989, Shrewsbury will be sponsoring a workshop on its experiences with this project. Inquiries by Massachusetts educators are encouraged and visitations can be arranged during the 1989-90 school year.

Materials available:
A conference will be set up in the fall of 1989 to disseminate materials.

Grant type:
Implementation

Contact:
Thomas Plati
Shrewsbury High School
45 Oak Street
Shrewbury, MA 01545
(508) 845-4641



Using Technology to Enhance Communications Somerville

Curriculum areas:
Language arts

Grade levels:
7 through 12

Equipment:
DEC VAX minicomputer, Apple II microcomputers

Materials:
Software: VAX system software, AppleWorks, auxillary print materials

Personnel:
Project leader, cooperating teachers, workshop instructor, consultant

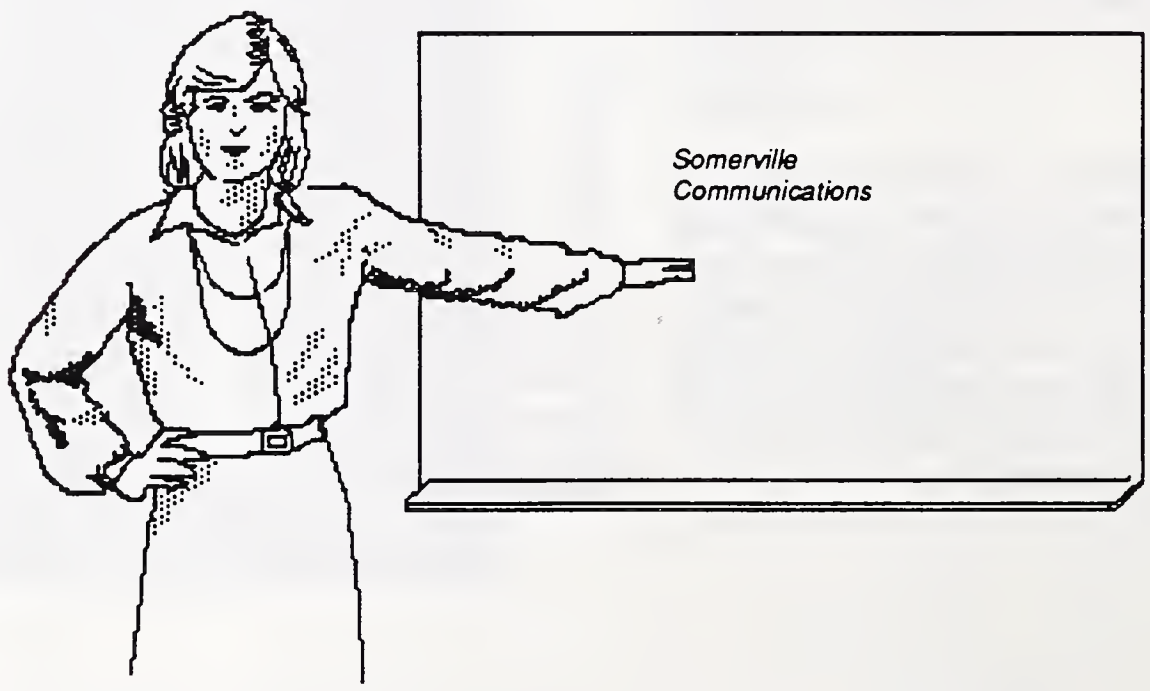
Description:
This project provides an opportunity for Somerville Public Schools to enhance writing instruction through telecommunications among students in the different schools. The school system also will be able to share information via technology.

Objectives:
1. To establish a communication link between elementary schools and high schools.
2. To design and implement a unit of instruction using telecommunications to enhance the teaching of writing.
3. To provide in-service activities to teaching staff implementing the curriculum unit and associated technical skills.

Procedures:
A curriculum unit was designed and implemented using a telecommunications link that connects various Somerville Schools. This provides new writing opportunities for students at the elementary and secondary levels. Students will use word processing and telecommunications to communicate with each other.

Grant type:
Implementation

Contact:
Ron Koehler
Somerville Public Schools
93 School Street
Somerville, MA 02143
(617) 625-6600 x6030



Interactive Television
South Berkshire Educational Collaborative

Curriculum areas:
All

Grade levels:
9 through 12

Equipment:
Cable TV system capable of two-way interaction, classroom studio at each site

Personnel:
Consultant to train teachers and media technicians

Description:
This project is in its second year of development. Efforts are being made to lease the existing cable TV system from Century Berkshire cable and develop a system dedicated to education. This will provide the channel capacity to serve the four member high schools with an interactive television system. Administrators and faculty are working together to identify curriculum needs.

Objectives:
To combine resources of several high schools so courses that have been eliminated, or are in jeopardy due to low enrollment and financial constraints, can continue.

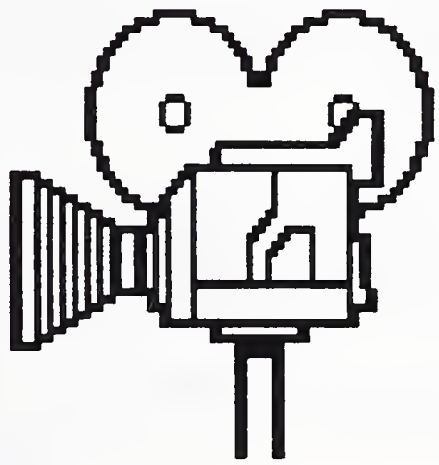
Procedures:
1. We conducted a needs analysis to identify curriculum areas and investigated the technology to meet our needs.
2. Negotiation with cable TV company and Cable Television Commission began.
3. Securing of funding and recruiting of volunteer staff took place.
4. The cable TV system was modified and studio classrooms were installed.
5. Staff training was initiated.
6. Planning for the pilot course began.
7. After piloting the course, there will be modification of courses and expansion of the curriculum.

Recommendations:
Distance learning can help districts maintain a comprehensive curriculum despite declining enrollments and continued financial constraints. It also builds collaboration among neighboring school districts. However, it relies on the availability of a cable TV system capable of two-way interaction.

Materials available:
Planning reports available upon request.

Grant type:
Implementation

Contact:
Richard Labrie
South Berkshire Educational Collaborative
Main Street
Stockbridge, MA 01262
(413) 298-3614



Telecommunications as a Tool for Research and Skill Development
South Coast Educational Collaborative

Curriculum areas:
All

Grade levels:
5 through 12

Equipment:
Modems and clean, accessible telephone lines

Materials:
Software: Communications software appropriate to the computers being used.

Personnel:
Classroom teacher

Description:
Thirty teachers from ten different middle and high schools received training in the use of the Tech Center's bulletin board system and in BRS and DIALOG on-line services. Modems and phone lines were installed at the various sites and teachers began to practice sending messages, uploading and downloading files, and searching on DIALOG, which was ultimately the on-line service of choice for the project. The teachers were divided into seven different groups to develop units that would involve student use of telecommunications.

A section of the bulletin board system was designated as school-to-school communication, and students began writing biographical messages and hints or questions about their specific projects. Different projects included Timewarps, Fall River history, American Family, Earthworms, Careers in Technology and Info-brokers.

Objectives:
1. To train students and teachers in the use of telecommunications and related equipment.
2. To allow students to use this tool for research projects.
3. To demonstrate to students the value of using on-line tools for research.

Procedures:
1. Train teachers.
2. Purchase and install equipment.
3. Plan and implement group projects: The teachers trained the students, who then used telecommunications as a research tool for their specific topics. Approximately 235 students have logged on as users of the Center's bulletin board system, and many students have been using CD-ROM and DIALOG as well.

Recommendations:
Training teachers in the use of hardware and software was a very effective way of efficiently training and involving the students.

The inter-district link was effective in removing the feeling of isolation that teachers and students often experience. These teachers will continue to communicate through the BBS link long after this project is completed.
A single line is not sufficient for such a project. Unrealistic demands, severe limitations on use, and user frustration will likely result unless a large multiline BRS system or its equivalent can be made available.

Materials available:
Manual detailing the organization and results of the project. Cost: $15.00

Grant type:
Implementation

Contact:
Martin Huntley
Computer Technology Center
c/o N. Middle School
Whetstone Hill Road
Somerset, MA 02726
(508) 672-2060

Video for Foreign Language Teaching
Springfield

Curriculum areas:
Foreign languages

Grade levels:
5 through 12

Equipment:
Video editing equipment, character generators, satellite dish and receiver, video monitors, video cameras

Materials:
SCOLA membership, videocassettes, printed materials

Personnel:
Video technical assistant

Description:
Four groups of foreign language teachers (Chinese, French, Italian, and Spanish) prepared an adapted video program for classroom use. Satellite-received foreign language programming provided the basis for the materials that were developed. Printed materials were prepared to accompany the video programs. The goal of the material was to make "real language" accessible to early level foreign language students.

Objectives:
1. To evaluate existing foreign language video programming.
2. To monitor live foreign language satellite-received programming.
3. To select and adapt foreign language video segments for classroom use.
4. To edit and supplement video segments with graphics and written data for classroom use.

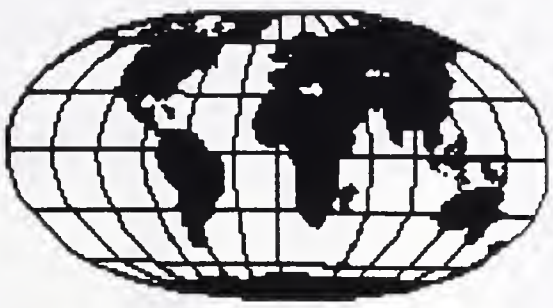
Procedures:
Teachers participated in a 45- hour video workshop, which included both instructional and editing sessions. They also prepared printed materials to accompany the video programs. The video programs will be used to bring real language introduction to introductory level foreign language classes.

Recommendations:
The materials are appropriate for any teachers involved in early level language instruction in these targeted languages. Those wishing to produce their own materials, either for higher levels or for other languages will need access to equipment and technical assistance in order to ensure the project's success. Good sources of foreign language video programming are available, but the labor-intensive nature of producing quality instructional materials should be noted.

Materials available:
Videocassette programs in French, Spanish, Chinese, and Italian with accompanying printed materials for classroom use.

Grant type:
Implementation

Contact:
Kathleen M. Riordan
Director of Foreign Language Teaching
Springfield Public Schools
195 State Street
P.O. Box 1410
Springfield, MA 01102-1410
(413) 787-7177



Project Connect
The Education Cooperative

Curriculum areas:
All

Grade levels:
All

Personnel:
Assistant superintendent, consultants, convener

Description:
This project evaluates the viability of using existing cable to connect towns, making it inexpensive for school systems in our collaborative to share curriculum. The goal was to protect courses in jeopardy of being discontinued, due to low-enrollment. Participating towns were provided with information explaining who they can connect with, how to make the connection, and how much it will cost.

Objectives:
1. To produce a plan that preserves jeopardized courses in schools.
2. To provide a blueprint of a long range plan to connect towns.

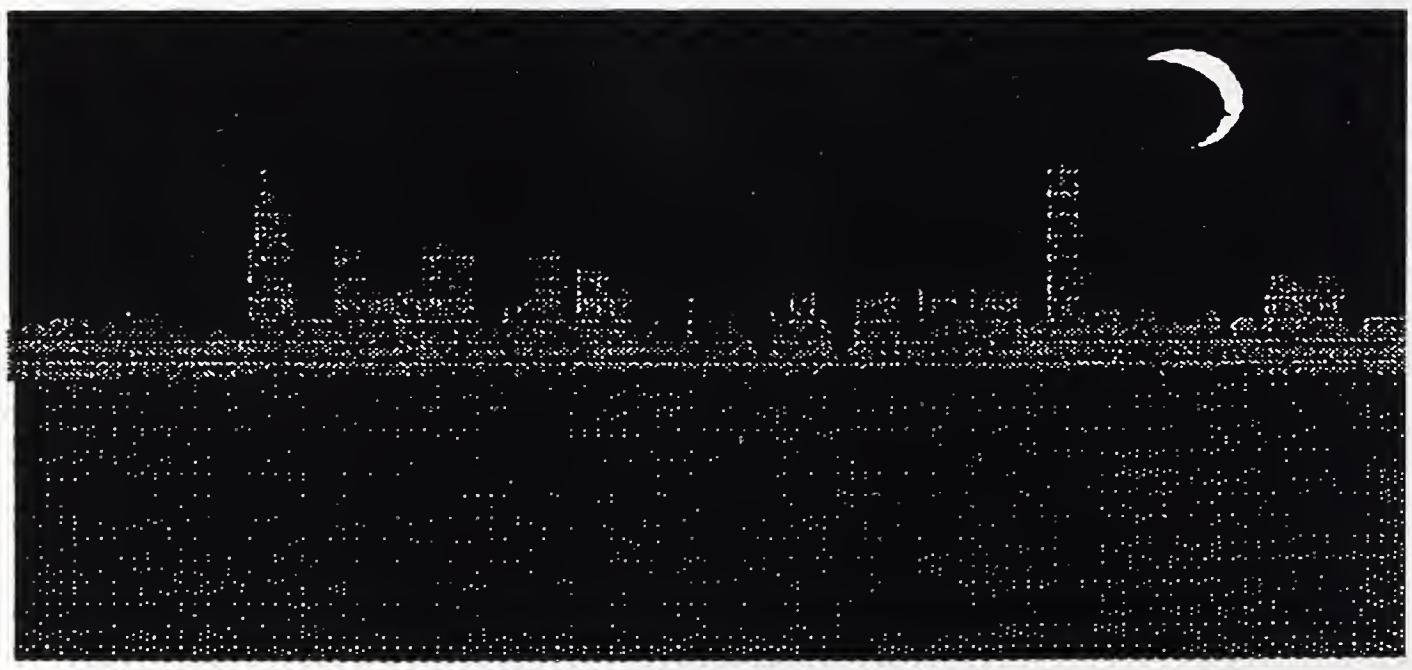
Procedures:
Assistant superintendents were asked to fill out a questionnaire providing information regarding courses. Media people were asked to list equipment. A consultant was hired to evaluate the available technology and to draw schematics.

Recommendations:
Educators can easily replicate this project. The partnership of the assistant superintendent was an excellent forum to share ideas. It is important to have some assurance of the cooperation of the cable companies and the availability of funds to implement such a project.

Materials available:
Manual

Grant type:
Planning

Contact:
Roger Ritch
The Education Cooperative
50 Kingbury Street
Wellesley, MA 02181
(617) 237-3028



Michael Boldman

Job Skills and the Computer
Upper Cape Voc-Tech

Curriculum areas:
Job related skills

Grade levels:
10 through 12

Equipment:
Computers and video equipment

Materials:
Computers and video materials

Personnel:
Coordinator to research curriculum materials

Description:
In order to better prepare our students, a planning process was initiated to identify the needs of the students in relation to their transition from school to the workplace, as well as means of implementing curriculum changes in order to facilitate this process.

Objectives:
1. To determine, specifically, what job-related skills our faculty and the local business community feel students must attain before entering the work force.
2. To conduct research on curriculum materials used to implement such a program.
3. To identify areas that need to be addressed and the technology and materials that would be used to implement the program.

Procedures:
1. A business and faculty survey was conducted in the fall to determine needs and priorities in the area of job skills.
2. The planning group researched and evaluated materials available to address the issue. Based on the survey, video and software materials were previewed by faculty and students.
3. An action plan was developed. The curriculum would address, in very basic and practical terms, areas such as writing skills, verbal communications, critical thinking skills, and in some cases, math concepts and applications. This program could very easily be used in an interdisciplinary, team-teaching setting or in a language program.

Recommendations:
The strength of this type of planning is its practical application from the student's viewpoint. It addresses many curricular areas and has immediate, concrete results for students.
The major weakness is our inability to implement this school-wide project at this time because of the lack of funding. Schools undertaking a similar project need to line up funding sources early and should be creative and flexible in their use of resources.

Grant type:
Planning

Contact:
Kate Janulewicz
Upper Cape Cod Regional Voc Tech
220 Sandwich Road
Bourne, MA 02532
(508) 759-7711

Conceptual Development of a New England Town Uxbridge

Curriculum areas:
All areas

Grade levels:
Kindergarten through 12

Equipment:
Apple IIe or IIGS Computers

Materials:
Bank Street Filer or AppleWorks or any word processing program, graphics software, etc.

Personnel:
Classroom teachers

Description:
Growth in our town resulted in many new students and teachers who were unfamiliar with the history of the area. Thus, there was a need to develop a source where local history could be readily obtained by both teachers and students. This project supports and enhances the curriculum by incorporating database technology and local history into all subject areas.

Objectives:
1. To develop new and alternative teaching units.
2. To develop the skills necessary to retrieve information from a database in order to create newspaper articles, write stories, and write research papers.
3. To improve writing and research skills.
4. To acquire knowledge about the history of the development of a small town.
5. To integrate local history into all areas of the curriculum.

Procedures:
The computer advisor and social studies coordinator developed a survey for classroom teachers to determine areas of interest in town history. A database was created, with factual information pertaining to areas of interest listed in the survey results. Activities and units were developed to enhance the database information. Teachers were trained to use the Bank Street Filer and supplementary materials.

Recommendations:
Our social studies curriculum is based on local history. Knowledge of the history of a community fosters pride and tends to increase self-esteem. This program provides a source where local historical information can be readily obtained and used to enhance the curriculum in all grades. Supplementary materials provide ideas for integration into all areas of the curriculum.

Data should be evaluated each year for possible improvements in some or all areas.

Materials available:
Database containing a history of Uxbridge.
Notebook containing ideas on integrating the history of the town into all areas of the curriculum.

Grant type:
Implementation

Contact:
Mrs. Lorraine Gniadek
E.D. Taft School
Granite Street
Uxbridge, MA 01569
(508) 278-2385

Global Village: Linking to Learn Wellesley

Curriculum areas:
Foreign language, social studies, English

Grade levels:
9 through 12

Equipment:
Macintosh or any microcomputer, modem, telephone line

Materials:
Software: Macterminal (or any telecommunications software)
Other: Telecommunications accounts

Personnel:
Foreign language teachers, social studies teachers, director, aide

Description:
Three international telecommunications services were used to connect teachers and students with people around the world.

Objectives:
1. To improve writing skills and foreign language skills.
2. To foster multicultural awareness.

Procedures:
1. Teachers were trained in the specifics of the telecommunication accounts.
2. Teacher-to-teacher contact was established between Wellesley teachers and the international educators.
3. Students from Wellesley schools were brought in contact with students from other countries.

Recommendations:
This project motivates disinterested students to reflect on multicultural issues. In addition, the communication between the students led to an improvement in their writing skills. The project also provides unique professional contacts for teachers.

Cost of services, technical requirements, and time management demands should be closely considered when implementing this type of projects.

Materials available:
A final Report, a how to activities guide, a training and support needs manual

Grant type:
Implementation

Contact:
Alan November
Wellesley High School
40 Kingsbury Street
Wellesley, MA 02181
(617) 446-6214

Planning Computerized Reading
West Bridgewater

Curriculum areas:
Reading and research

Grade levels:
7 through 12

Personnel:
The Educational Technology Planning Committee (media specialists, teachers, parents, and administrators) and a consultant.

Description:
This project involved the creation of an Educational Technology Planning Committee. The Committee visited the schools that the students typically attend after graduation, as well as various local educational technology programs, to identify areas in which students might need support. After the visits, and working with a consultant, the committee was able to develop a final implementation plan for the use of educational technology as support for students engaged in independent reading and/or research projects.

Objectives:
1. To identify the independent reading/ research projects presently assigned by teachers.
2. To identify existing and potential computer support available to students pursuing these tasks.
3. To Identify the computer-based skills that the students would need upon graduation.
4. To identify what needs exist for computerized support of independent reading research projects.
5. To create a final implementation plan to meet the identified needs.

Procedures:
1. The committee surveyed teachers on independent projects assigned.
2. Committee members attended team-building workshop.
3. The committee visited model schools/programs and interviewed colleges and business to identify needs of students after graduation.
4. The group surveyed consortium memberships, schools, and local media agencies to identify existing resources.
5. Committee members participated in a needs analysis workshop and implementaion planning meetings.
6. The committee wrote and evaluated the final implementation plan.

Recommendations:
The committee found that both the formal process of planning and reporting activities and the involvement of an outside consultant allowed a fresh look at the educational technology needs of the school across all departmental lines. By focusing on the needs of the students after graduation (rather than a "wish list"), the committee was able to develop a plan that will meet the needs of the students and, at the same time, realistically create departmental resources.

Materials available:
A calendar of independent research projects at West Bridgewater Junior/Senior High School, implementation plan.

Grant type:
Planning

Contact:
Elizabeth D. Murphy
West Bridgewater Junior/Senior High School
West Centre Street
W. Bridgewater, MA
(617) 294-7812

Application of Curriculum and Instructional Databases Westford

Curriculum areas:
English, language arts, and math

Grade levels:
6 through 8

Equipment:
DEC terminals, modems and scanner

Materials:
Software: ABACUS database
Other: Equipment linked to the Merrimack Education Collaborative VAX computer

Personnel:
Project director, evaluation consultant, trainers from ABACUS

Description:
The goal was to establish a curriculum achievement monitoring system in two middle schools. The effort was targeted at the middle school and focused on the basic skill areas of language arts and reading.

Objectives:
1. To organize and train teachers for participation in the management of the instructional improvement process.
2. To enable teachers to target instruction through the application of a basic skills assessment monitoring system designed by the curriculum teacher task force.

Procedures:
Through a series of training workshops:
1. Teachers were oriented to the program.
2. Volunteering teachers learned the database ABACUS and used it to create new curriculum databases for their own subject areas.
3. Staff then defined specific criteria for evaluation and used the database for skills assessment, testing, and monitoring.

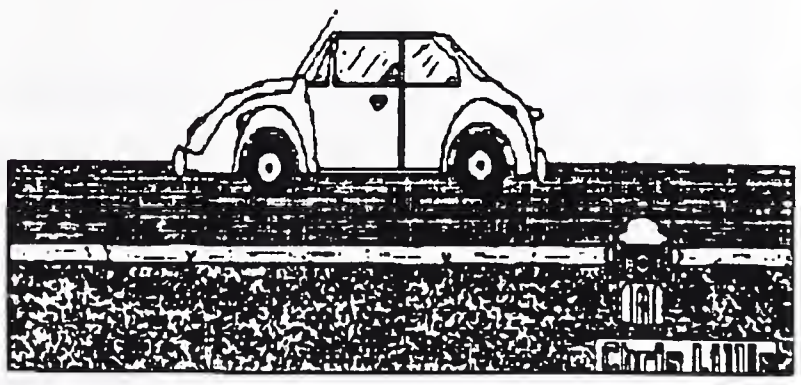
Recommendations:
This project was extremely useful in helping the district develop an achievement monitoring system. This system provides for curriculum accountability, various levels of student abilities, and a process by which students, staff, and parents can monitor identified student outcomes. In addition, this program allows staff to better monitor and assess their teaching efficiency by utilizing ABACUS's management system.

A weakness of the program is that a district must identify the skills/outcomes it wishes for all students. This process takes considerable time and can be a major effort by staff.

Materials available:
Information on the curriculum database under development.

Grant type:
Implementation

Contact:
Dr. John A. Crisafulli, Superintendent
Westford Public Schools
35 Town Farm Road
Westford, MA 01886
(508) 692-5560



Chris Lillis

Writing in a Networked Microcomputer Lab
Weston

Curriculum areas:
English and social sciences

Grade levels:
6 through 8

Equipment:
24 Macintosh computers, 6 printers, modem

Materials:
Software: file server, print spooler, WORD Wordprocessor

Personnel:
Classroom teachers

Description:
A networked Macintosh laboratory with 2 file servers permits 6-8 students to write, revise or publish as part of their English program. The lab setup encourages teacher-student conferencing while the student's work is in progress. The use of computers for writing also improves spelling, while enhancing word usages. In addition it adds a professional appearance to students' work.

Objectives:
1. To introduce students and staff to word processing as a writing tool.
2. To provide increased opportunity for students to do revisions of writing projects.
3. To increase the emphasis on process writing.
4. To facilitate or increase teacher-student conferencing on writing.

Procedures:
1. A file server was set up to contain individual folders.
2. Staff training was provided.
3. A three-week introductory unit for all students was team taught by the computer coordinator and the English teacher.
4. Weekly lab sessions were arranged for English classes.

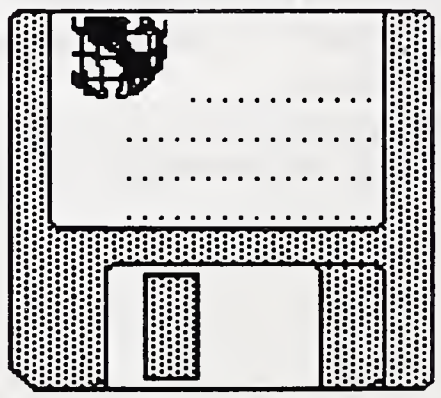
Recommendations:
This project has increased the students' interest and willingness to revise their writing. It has also enabled them to develop word processing skills which they use at home as well as in school.

Long range planning is required to maximize the lab's effectiveness. The need to "share" resources limits the access to the lab. It is also difficult for a part-time coordinator to provide all the needed technical support. Schools that are planning to implement such a project are encouraged to visit a lab like this to see its setup and operation.

Materials available:
A training disk used by students to use the program WORD. Send disk to contact person for a free copy.

Grant type:
Implementation

Contact:
Dennis McCowan
Weston Middle School
456 Wellesley Street
Weston, MA 02193
(617) 899-0620



Integrating Computers in the Classroom
Whitman

Curriculum areas:
All

Grade levels:
K through 5

Equipment:
Apple II computers

Materials:
Software: various programs related to the curriculum.

Personnel:
Computer consultant and classroom teachers.

Description:
The project trained teachers to use computers as learning tools in the classroom. The program focused on the integration of computers and the application of related software to the district's curriculum objectives.

Objectives:
To encourage students at all levels to utilize available computer sofware as part of their learning experiences.

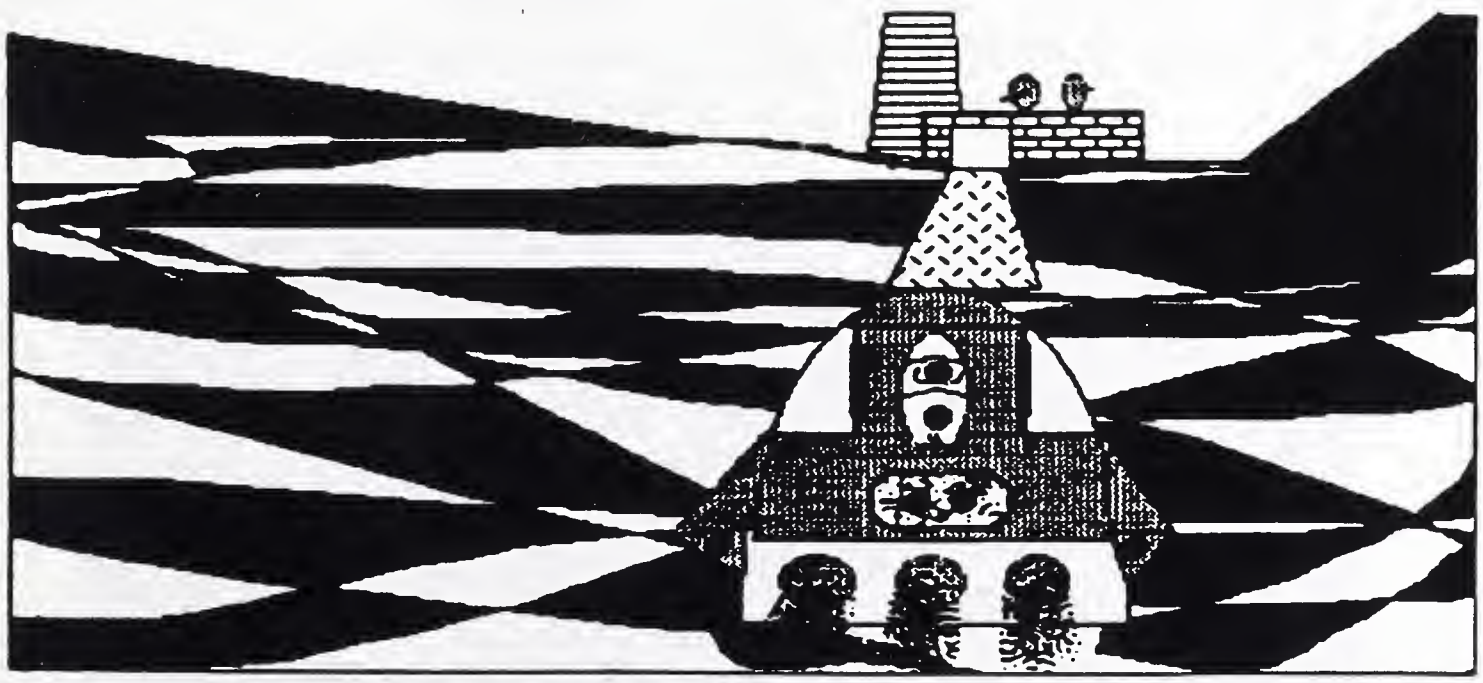
Procedures:
The computer consultant organized six all day training sessions for teachers. The groups were divided into grades K - 2 and 3 - 5. The computer consultant discussed the capabilities of the available software and their application to classroom activities. In addition, the computer labs were made available to the staff so they could familiarize themselves with the software purchased.

Recommendations:
The evaluation of this project revealed tremendous teacher support for the program's content and structure. The teachers valued the computer consultant's expertise and felt she was very helpful in making practical suggestions regarding software for classroom activities. The program can easily be duplicated. The only weakness noted was the number of days the consultant was available.

Materials available:
Computer software inventories by grade and subject.

Grant type:
Implementaion

Contact:
Clarie E. McCarthy
Administrator of Special Education
168 Whitman Avenue
Whitman, MA 02382
(617) 447-7300



TIM BITHONEY

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Integrating Writing and Reading Software
Wilbraham

Curriculum areas:
Reading and language arts

Grade levels:
6 through 8

Equipment:
Apple IIe computers, printers

Materials:
AppleWorks, Multiscribe, miscellaneous language arts software, such as Grammar Attack, Spell It!, TimeLiner, Publish It!

Personnel:
Computer teacher to coordinate integration, classroom teachers

Description:
Eight language arts/reading teachers were involved in this project to improve writing skills and to encourage the use of word processing by students and teachers. Teachers met during team planning times and after school to choose appropriate software and informally discuss how to implement technology into their classrooms. Five Apple IIe computers were placed in each classroom. The compute teacher assisted the classroom teachers in this project.

Objectives:
1. To improve writing skills in grades 6 through 8 through the use of word processing.
2. To integrate computers into the language arts and reading curriculum.
3. To provide teachers with assistance in implementing software into their curriculum.

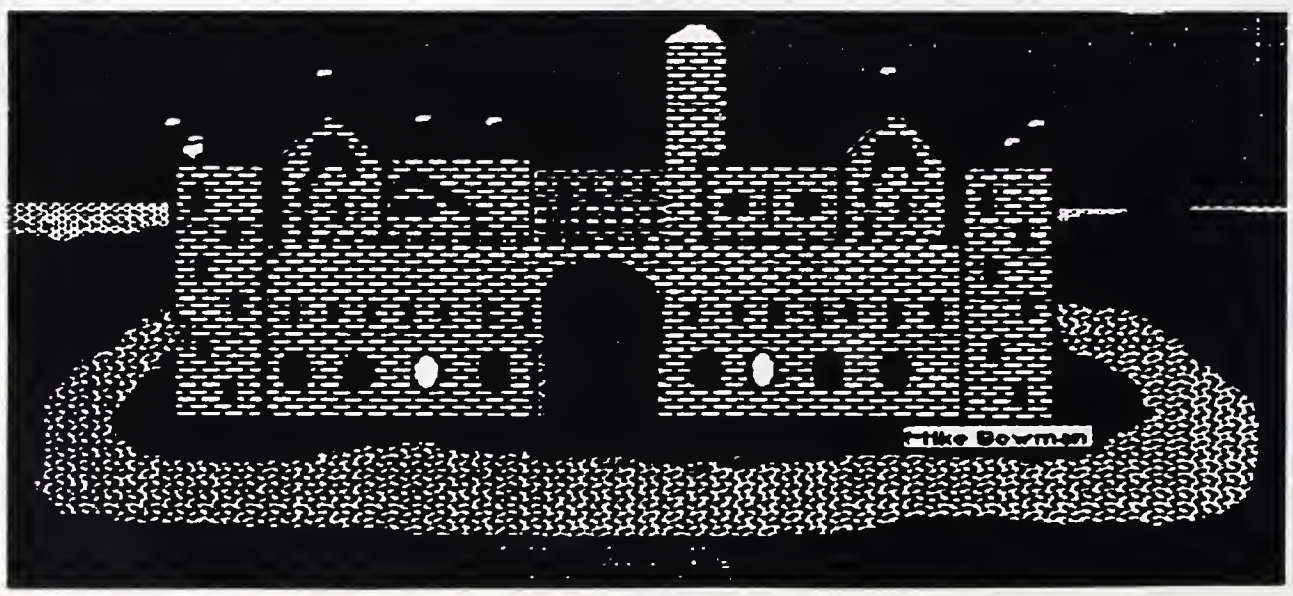
Procedures:
Teachers met in September with the computer teacher to discuss and compile procedures and plans for implementing this project. Software reviews and catalogs were made available to each teacher. After the software was purchased, inservice training was offered after school and during team planning time.

Recommendations:
The strength of this project is the awareness and enthusiasm it has produced in both teachers and students. It is a first step in attempting to integrate this technology into the curriculum. The students are benefiting from the skills they are learning and are enjoying it.

Materials available:
A database describing all software purchased for this project and indicating how the teachers used the software in the classroom.

Grant type:
Implementation

Contact:
Dawn Fitzgerald
Wilbraham Middle School
46 Stony Hill Road
Wilbraham, MA 01095
(413) 596-9061



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